Commercial Human Space Flight: Right Now … and Coming Soon

REMARKS BY

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Thank you for inviting me to join you today. It was an honor to accept, and it's a pleasure to be here.

My thanks and congratulations to our distinguished French and American hosts, and special thanks to Jean-Jacques Tortora and to Jeffrey Bialos for their fine work in bringing this symposium together.

Here at the dawn of the 21st Century, people are looking at space in new ways and seeing their own reflection in it … no longer just watching the launch of someone else, but perhaps actually going there themselves.

There are many believers in the future of commercial human space flight.

But, to be frank, there are also a number of skeptics.

That's why, today, I want to take a candid look at where we stand and where we're going in the commercial space world.

And I want to do that by addressing the **Three Big Questions** surrounding commercial human space flight:

- Do policy makers in the United States take it seriously?
- Is there a market?
- How will comercial human space flight affect commercial space transportation?

Let me start by explaining how American policy makers view the prospect of private citizens going into space on private vehicles.

I. POLICY MAKER PERSPECTIVE

According to the famous author/inventor, Arthur C. Clarke's Third Law, "Any sufficiently advanced technology is indistinguishable from magic."

To that let me say … "not to the U.S. Office of Commercial Space Transportation."

We know there's nothing magic about space flight. It is a profoundly demanding, exacting discipline that requires tireless work and thorough preparation.

Because it's so difficult to do, but can produce such extraordinary results, American policy makers take it very seriously. In fact, that's why we have an Office of Commercial Space Transportation located within the Federal Aviation Administration … the FAA.

We regulate commercial space transportation. We are the only office in the United States government that does that. We regulate to the extent necessary to protect the public safety and the safety of property. We license launch, reentry and spaceport operations.

We licensed the launch and reentry of SpaceShipOne, the winner of the $10 million Ansari X Prize last year.

We license the highly successful international business consortium called Sea Launch, made up of U.S., Russian, Ukrainian and Norwegian interests.

Overall to date, we have licensed 172 launches. Every one of them has been a success in part because of an unrelenting focus on safety.

Our core mission is safety.

To the extent that we take care, and improve and advance safe launch and reentry operations, we advance and enlarge the commercial space industry … not just in the United States, but anywhere rockets fly.

We spread a culture of safety and that's good for everybody who works with rockets wherever they are.

In the days when commercial launch vehicles carried cargo only – which means right up until last Fall – safety was always foremost. It was essential to protect the operators, the uninvolved public, the property, and the payload.

But this is 2005, and we are at the front door of a different era. Now safety rises to a *still higher* level because human life won't be just in the vicinity of the launch vehicle. It will be on it.

That explains why last December 23rd, the Commercial Space Launch Amendments Act of 2004 became law. In that new law, the Secretary of Transportation was assigned responsibility for commercial human space flight.

The authority for the implementation goes directly to the FAA and to our Office of Commercial Space Transportation.

The legislation is a clear, emphatic and forward-looking statement by the leaders of the United States, that private human space flight is imminent, and we need to be thoroughly prepared for it.

Unmistakably, American policy makers are taking private human space flight very seriously.

The legislation says unequivocally that, "the future of the commercial human space flight industry will depend on its ability to continually improve its safety performance."

Our office is following through to implement the legislation.

The Act specifies that we issue proposed human space flight regulations by December 2005 and final rules by 2006. We issued guidelines for flight crew and space flight participants – most people call them "passengers" – in mid-February.

The Act also creates a new experimental permit for research and development of new reusable launch vehicles. We released guidelines for that permit in late May. The permit will be easier to obtain than a license and will be modeled to some degree after the Experimental Airworthiness Certificate commonly used in aviation research and development.

So our office is very busy, and, I might add, completely dedicated because we believe in our work. In fact, let me define our commitment this way.

No doubt some of you are familiar with the astronomy term, "standard candle." It refers to an object of known luminosity by which great distances can be measured.

Our organization intends to shine brightly enough to be the standard candle of safety in commercial space transportation. We strive to be the measuring standard, showing how far we have come in promoting safe space flight and the distance we are willing to go to make sure the record goes on.

We are determined to be the designers, the architects, and the enablers of the space transportation system of the future. No one has done what we have done in commercial space flight. We are the leaders.

And, if anybody in the world can do what it takes to lead the way safely into commercial human space flight, our name is on the address.

So, to the first question about whether we take this seriously, I will summarize the evidence by simply saying … yes.

Now to the second big question, is there a market?

II. IS THERE A MARKET?

To address the question of a market for human space flight, let's look at the commercial space market as it is right now.

During the time frame between 1984 and 2004, there was a total of 1,907 launches among the civil, military and commercial sectors worldwide. Twenty percent of the total was commercial

During those same years, that twenty percent converts into 376 successful commercial launches worldwide. For the United States, 1998 was a big year. Europe had banner years in 1997 and 2000.

The overwhelming number of commercial launches between 1984 and 2004 – 335 out of the total 376 – carried communications payloads.

Substantially more US-owned payloads were launched on non-US vehicles, than we launched payloads of other countries – by a margin of more than 2 to 1.

Those are some indicators of where the industry has been. Now, what about the years ahead?

The FAA, through our office and our Commercial Space Transportation Advisory Committee, forecasts an annual demand of roughly 23 commercial launches worldwide from 2005 to 2014. That's 23 launches a year.

The combined forecast is similar to last year's forecast of 23.4 launches per year as well as the 2003 forecast of 23.7 annual launches.

Conclusion? Expect a relatively steady demand in the coming years.

And it is, has been, and will likely remain for the immediate future, an overwhelmingly expendable launch vehicle market, the mainstay of commercial space for more than two decades.

But let's look at the prospects for expanding that market by adding commercial human space flight to the roster.

Probably the first thing to say here is best wishes to Dr. Greg Olsen who is set to leave Saturday for the International Space Station aboard a Russian-built Soyuz. It's not a private commercial space flight, but a firm in nearby Arlington, Virginia brokered the trip. It's the same firm that already has collected $2 million in deposits for suborbital flights.

As we approach the first anniversary of the prize-winning SpaceShipOne flight, the people who did that are planning to do more.

Virgin Galactic and Scaled Composites have formed a new organization called The Spaceship Company to build a fleet of nine-person, suborbital spacecraft. They say they already have 100 people ready to pay $200,000 each for a ride, which means no coach seats yet.

Next week, the X Prize Foundation and the State of New Mexico will hold the X Prize Cup events in Las Cruces during World Space Week. It will be an opportunity to see the current state of the industry art on display in one place. In addition, watch for a press announcement from Peter Diamandis and the X Prize Cup about another new business venture.

And then there's America's Space Prize. The $50 million prize is sponsored by Bigelow Aerospace. To win it, a spacecraft must reach an altitude of 250 miles; carry no less than a crew of five; complete two full orbits of the earth and return safely; then do it again in 60 days. The deadline is January 10, 2010, less than five years from now, but, so far, over 30 companies are in the running.

That's just a small sample to show that business is interested in this. A sizeable number of companies are committing resources to private human space flight because they see a profit to be made. They see a realistic way to make commercial space pay off.

Our office, the Office of Commercial Space Transportation fully supports those efforts just as we have supported the earlier work in commercial space.

That's simple enough, but it's important enough to repeat. Our office will fully support those efforts just as we have supported the earlier work in commercial space.

It's not only what the law requires. It's what the prospect of growth and adventure demand.

Commercial human space flight is an area of great promise. It is an ***addition*** – not a replacement, an addition – to the field of commercial space business possibilities and a reasonable next step for the industry to take. That's why we are working with the players to safely accommodate commercial human space flight.

We are excited about it for any number of reasons. One of those reasons is that science has a record of building the possibilities of tomorrow on the shoulders of the recently discovered.

So it is reasonable to say that the future of commercial space lies beyond what we know now and what we are doing with it today.

The Office of Commercial Space Transportation believes that by helping to safely advance today's technology and by supporting the

enlargement of the space catalog, we are helping to pave the way for new uses and services yet to be identified.

And there's also an intangible at work that people of science and people of business sometimes are a little hard pressed to quantify, but recognize when people in other lines of work describe it.

One of those people was John Gardner, a former cabinet secretary and the founder of Common Cause. He wrote: "When we raise our sights [and] strive for excellence … we are enrolling in an ancient and meaningful cause – the age-long struggle of humans to realize the best that is in them."

We clearly see that same sense of quest at work in the world of private human space flight.

So, to the question of whether we believe there is a market for commercial human space flight … let me say once again, yes.

III. THE EFFECT OF COMMERCIAL, AS IN PRIVATE, HUMAN SPACE FLIGHT

Finally, now we come to the issue of what effect private human space flight will have on the world of commercial space transportation.

I don't want to defame the science fiction of Jules Verne by making fantastic forecasts. That's the kind of thing that makes fiction popular, but gives science indigestion.

Instead, I am very comfortable with a set of five observations about tomorrow based on the quality of commercial space work I see today. These are very basic, I think, but likely to happen and to have an impact. So let me just put them out there for you.

- First, private human space flight will permanently expand the reach of commercial space transportation. The key word there is "permanently." It has yet to establish its full presence, but when it does, private human space flight will be here to stay.
- Second, there is a symbiotic relationship at work. Progress in commercial rocketry has helped make private human space flight possible. Those opportunities for private human space flight will, in turn, lead to further technical progress in commercial space carriers.
- Third, private human space flight will produce renewed enthusiasm for space generally. In a world that makes so many claims on the consumer's attention, the initial impact will be greatest among those devoted to space flight who will see a good idea transformed into a reachable goal.

- Fourth, private human space flight will attract fresh thinking about space and entrepreneurial possibilities. It will bring people to the industry to ask questions no one ever thought to ask before. Candidly, I can't imagine what those questions will be, but I hope they will be as tough as they are exciting because the answers will help shape this industry.
- And, fifth, you can be certain that the advent of private human space flight will attract radicals … true radicals like the Wright Brothers, Glenn Curtiss, Jack Northrop, Kelly Johnson, Robert Goddard and more Burt Rutan's.

Those are just a few thoughts about what I see ahead. But please keep in mind that what we are talking about, in an evolving industry is not… ***is NOT*** … that space will change hands.

There will simply be more hands.

What we seem to have right now is a rising capacity among a growing number of entrepreneurs – a milestone in itself formed out of a creative mix of innovation and inventory – to achieve suborbtial and eventually orbital flight for human passengers.

In the process, I think you can look for these enterprising pioneers to bring us not only brand new and improved technology, but also a wider range of applications and reasons to use it.

As private human space flight proves itself safe and reliable, look for two things to happen.

First, the fact that people you actually know or who live in your community will have flown in space, will raise, not just the visibility, but also the ***tangibility*** of space in an ultra high-technology age.

In other words, ***space will become more real to more people.***

Second, private human space flight will reaffirm and reinforce the credibility of commercial space transportation. It will be seen as another very powerful means for currently ground-bound thinkers to bring their imaginations to bear in a limitless venue.

Do I really think these things will happen?

One more time: Yes. I do.

After all, it is only recently that private companies have gotten their hands on human space flight. For them, for all of us, this is still the gravelly frontier where we all need to be sure of our footing and certain of our direction because the goals are irresistible … going into space, a place that belongs to all of us, to none of us and to every tomorrow we can imagine.

CONCLUSION

So let me end today by giving you just one more example of why I have so much confidence in the world of commercial space transportation and private human space flight.

I have always been moved by the words of a woman from the state where I was born, and who is buried in this city where I live. Her name was Helen Keller, a woman with profound physical disabilities but possessed of a far greater mind.

Many decades ago, she encountered the Empire State Building and afterwards, she wrote this:

"Imagination creates distances and horizons that reach to the end of the world. It is as easy for the mind to think in stars as in cobblestones."

That's really something to ponder.

Thinking in stars. The power of imagination and the adventure of commercial human space flight.

What a combination. What an opportunity!

Thank you very much.