

With Mike Griffin

Interview by Frank Sietzen Jr.

What was your assessment of NASA when you first came in as administrator last April?

Well, it was the same assessment as I've had for 35 years working with the agency in the space business: an immensely capable agency—the most dedicated and unselfish mission-oriented people you will find anywhere.

We're in a bit of turmoil, because we're changing the direction that we're going as an agency. We've been given a new mission statement by this president, following on the heels of the Columbia Accident Investigation Board's [CAIB] recommendations that we're going to have a program of manned spaceflight, but the goals must be worthy of the difficulty, the costs, and the risk. Those goals mean there is something beyond the space shuttle and the space station.

This is a new direction for NASA?

This is new. We've been on the path we've been on for three decades. And so there is a certain amount of turmoil in the agency right now, on how we shift directions. It doesn't mean, however, that there is anything fundamentally wrong.

What was your assessment of the Return to Flight effort, and the space ops team?

There has been much talk about the NASA culture. So I would say that what I've seen in the half-dozen or more meetings that I've been in, leading up to Return to Flight, that there have been arguments, questioning, vigorous back-and-forth exchanges on technical matters. I think that is the right culture, and what is basically an engineering development and operations organization. As long as we can maintain that, we are on the road to recovery. A successful Return to Flight mission will get a lot of this behind us, I believe.

Do you think NASA has, or had, a culture problem?

Well, I can't say, because I wasn't here, and I wasn't in the manned spaceflight community at that time. During the period of time leading up to Columbia, and [this] was cited by the CAIB, I have to say, if the accident investigation board found that there was, then I must believe that there was. But I wasn't part of it at the time. Any other conclusion is improper on my part. Let me also say that those who were managing the space shuttle program at that place and time are not there anymore. There is a new management team. I think they are doing the best they can do.

You've moved very quickly to make a large number of changes in both personnel and management structure. You decided not to wait for a period after becoming administrator, say six months or so, to see how the place works first. Instead you've moved right in. What was your framework for these changes? And secondly, why the rush to implement these changes so quickly after coming on board?

Let me answer your second question first. This administration runs out in January of 2009. When I walked in the door we had three years and nine months left. As this interview goes to press, we have three years and five months left. NASA is a large ocean liner with a small rudder! I'm the rudder. It's not a moment too early to begin changing the direction of where we're going, in order to allow us to respond to the opportunity the president has put forward.

Do you think NASA must transform itself, in fundamental ways, to accomplish the president's Vision for Space Exploration?

Yes. We have spent the best part of three decades as fundamentally an operations agency. We have operated the space shuttle. Now we have developed and built the space station. But a lot of that—that development culture—has been subsumed

by the agency's shuttle operations culture.

If we're going to return to the Moon and go to Mars, we are going to have to become a development agency again. We need different types of people with different types of skills. Not replacing the expertise that we've accumulated in manned spaceflight operations over the last two and a half decades, but something augmenting those skills with new skills.

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How important to you are workforce issues?

I'd say they are crucially important. As a first order, it doesn't matter to me if the person is wearing a civil service badge or not. I'm the poster child for moving back and forth between industry, laboratories, and government. Most of us will wear those different badges at different times in our lives. Actually, I think that's very healthy.

What I think is not healthy is the overall state of our aerospace industrial—and, frankly, academic—base today. Aerospace employment has declined since the Cold War ended. Graduate school and undergraduate enrollment in engineering, mathematics, and the physical sciences continues to decline. That is, U.S. citizen enrollment. I think this is a very serious issue.

What can you do about any of this?

One of the many things that I like about the Vision for Space Exploration is that it provides NASA and the aerospace

industry with the kinds of missions that will attract the best and the brightest to be part of it, because it's exciting.

How can you get the public to support this on an ongoing basis?

Well, everywhere I go people keep asking me what I do—and by the way, I never say that I'm the NASA administrator; I say that I'm an aerospace engineer, or that I'm in the space business. Even when I'm playing golf, as I did this past weekend. And people are always excited to be talking to somebody who says he's in the space business. They want to know, when are we going back to the Moon? When are we going to Mars? Or they will talk about the Hubble Space Telescope.

What do you tell people when they ask when we're going back to the Moon?

I tell them we are going back to the Moon in the middle of the next decade. And we'll go to Mars sometime after that—when, we don't know right now.

Do you see, in the next year or so as the budget situation gets tighter, any need for reductions in force in the NASA field centers?

Most certainly not. NASA has three main functions, three main mission areas: human spaceflight, science, and aeronautics. Now the Bush administration's Vision for Space Exploration is primarily

about altering the direction in which we take human spaceflight; supplementing that, of course, with robotic exploration of the type we already do. So certainly we

will not damage a robust space science program, nor will we further cut aeronautics research, in order to fund the human spaceflight program.

Michael D. Griffin took office as the 11th administrator of NASA on April 14. Previously he headed the Space Dept. at Johns Hopkins University's Applied Physics Laboratory in Baltimore, Md.

Before joining Johns Hopkins in April 2004, he was president and CEO of In-Q-Tel. He also held several positions within Orbital Sciences in Dulles, Va., including CEO of Magellan Systems. Previously Griffin served as chief engineer at NASA and as deputy for technology at the Strategic Defense Initiative Organization. He was also an adjunct professor at the University of Maryland, Johns Hopkins, and George Washington University. He becomes only the second former NASA associate administrator to serve in the agency's top job (the first being retired Navy Adm. Richard Truly).

Griffin has taught courses in spacecraft design, applied mathematics, guidance and navigation, compressible flow, computational fluid dynamics, spacecraft attitude control, astrodynamics, and aerospace engineering. He is the lead author of more than two dozen technical papers, and of a textbook on spacecraft design.

A fellow of the AIAA, he has received the NASA Exceptional Achievement Medal, the AIAA Space Systems Medal, and the DOD Distinguished Public Service Medal, the highest

award given to a nongovernment employee. He is also a certified flight instructor with instrument and multi-engine airplane ratings.

Griffin received a bachelor's degree in physics from Johns Hopkins University; a master's degree in aerospace science from Catholic University of America; a Ph.D. in aerospace engineering from the University of Maryland; a master's degree in electrical engineering from the University of Southern California; a master's degree in applied physics from Johns Hopkins University; a master's degree in business administration from Loyola College; and a master's degree in civil engineering from George Washington University.



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Where would you make cuts, if they had to be made?

We're not going to make any cuts. Hopefully the reason we're not going to have to make cuts is that Congress will fund NASA at the level the president has requested. To implement the vision, in that sense, we would know what the funding will be, and we believe that we know what the goals are. The question is, when do we arrive? Having fixed the goals and fixed the money, the only question is the schedule. This is consistent with our "go as you can afford to pay" approach to exploration. This is not Apollo! We're not expecting a huge funding ramp-up.

What we are expecting, and hoping for, and so far have received, is consistent year-to-year congressional support for a robust NASA program. Now things will be a little tight for the next few years as we try to phase out the shuttle while phasing into the new systems. But that doesn't mean we haven't received congressional support, because we have.

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You've said the preliminary framework for your new commercial space entrepreneurial solicitation for crew and cargo services to ISS is an adjunct to the RFP, with the prime contracts for the CEV crew and cargo capability. But if you are successful in creating this lower cost crew and cargo capability, with one or more successful entrants, how will this change the way the prime contractor aerospace firms do business, and how NASA buys their services? Won't the success of the entrepreneurs change the primes as well, if they are building a CEV for \$20 billion or \$30 billion of the government's money?

I hope it's not going to be anywhere near that amount of money.

Okay, so let's say \$10 billion. How will these entrepreneurs change the prime aerospace contractor status quo?

We will have to marry them.

"I've said several times the government should not be in the business of picking winners. But we should be in the business of rewarding winners."

How will you do that?

The government buys things in different ways. When the government must guarantee to get a product, and when that product is on the edge of the technical state of the art—such as, for example, artifacts associated with manned spaceflight—the government often issues what we call a prime contract, or issues an RFP to solicit bids for a prime contract.

We tell the contractor in great detail how to build the product that is sought. Very detailed specifications are given, because we want to be very certain that we get what we want. These are high-cost items. Typical industrial suppliers can't afford to take the risk to develop these things on their own, or hope that there might be a government market. This is the way ships and submarines and military aircraft and spacecraft are bought.

However, most of the nation's economy doesn't work that way. Most of the nation's economy consists of a competitive market of arm's-length producers and consumers. To the extent that we can attract that mentality to the space business, we at NASA will be better off.

In some of my speeches I've called attention to the fact that the government takes two different approaches to buying airplanes. We buy airline services like cargo airplanes such as the KC-17, and we also hire airlines to provide cargo delivery under a government contract.

So far in the space business, we've had only one kind of service. We buy the space equivalent of the KC-17s. We own the hardware. Now, if we can find a way to engage people to provide truly commercial services, arm's-length transactions, to NASA—and for that matter to military space forces—then we can engage the engine of competition, which is really what has made America what it is.

And NASA doesn't have too many

markets where it can do that. So I've singled out the requirement to supply cargo, and later crew, to the International Space Station as the primary example of such a market. And I intend to use it for everything it's worth to stimulate the development of the commercial space industry.

I've said several times the government should not be in the business of picking winners. But we should be in the business of rewarding winners.

What role do you see for the international community in the Vision?

The most enduring thing about the space station program has been the quality of the international partnership. I would expect that as we ramp up our plans and arrangements to go to the Moon, we will find in the international community those who will want to accompany us, just as we have on the space station program.

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Let's say it is January 20, 2009, and you are leaving office as administrator. Describe for me, from that vantage point, your legacy—what do you hope to have accomplished?

Well, when I came in I said I had about six things I wanted to do. You can find them in my testimony, but if this is a playback, what I hope to have accomplished is [that] we flew every shuttle flight safely on my watch; we have in place by that time a firm arrangement for the shuttle's successor vehicle, the CEV; we have in place an agreed-upon architecture by which we would return to the Moon; we've made a place for the commercial space industry in our plans and our operations; we conducted a robust program of science and aeronautics development and research; and the architecture we've laid out for going to the Moon is clearly applicable to going to Mars in short order.

If we can do this, it will have been a successful four years.