

Remarks to the National Space Club

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Three years ago, members of the National Space Club were dealing with some of the darkest days ever known to our space program, the loss of the space shuttle *Columbia* and its crew. In the days and months following the loss of *Columbia*, there was an extensive discourse concerning our nation's lack of clear, coherent, and compelling goals for the nation's human spaceflight program. NASA was seen to be suffering from a period of uncertainty and benign neglect concerning the broader purposes of our space enterprise. Admiral Hal Gehman and the members of the Columbia Accident Investigation Board (CAIB) recognized that merely determining the proximate cause of the accident, and returning the shuttle to flight, would be an insufficient remedy. The policy discussion of that period was both needed and timely, and I felt privileged to have a small voice in it as a private citizen. I am now even more honored to be leading our nation's civil space program out of that dark period and into what House Science Committee Chairman Boehlert referred to as a Renaissance period. All of us here hope that he is right.

Nowhere was the essence of the matter summarized more cogently than in the CAIB report. As the CAIB noted, with the technology we can envision today, human spaceflight will continue for the foreseeable future to be expensive, difficult, and dangerous. Underscoring the significance of this reality, June Scobee

Rodgers, the widow of Dick Scobee, Commander of the Space Shuttle *Challenger* on that ill-fated day twenty years ago, recently noted, “Without risk there’s no discovery, there’s no new knowledge, there’s no bold adventure...the greatest risk is to take no risk.”

We assume risk in human spaceflight because leadership in this endeavor is a strategic imperative for the United States. It is a great national enterprise.

Admiral Gehman recognized that our nation needed to decide whether the goals and benefits of human spaceflight were commensurate with the costs and risks of this enterprise, and that for this to be true, those goals must lie beyond the simple goals achievable in low Earth orbit with the Space Shuttle and the Space Station.

The President summarized these points in his speech at NASA headquarters two years ago: “In the past 30 years, no human being has set foot on another world, or ventured farther upward into space than 386 miles -- roughly the distance from Washington, D.C. to Boston, Massachusetts. America has not developed a new vehicle to advance human exploration in space in nearly a quarter century. It is time for America to take the next steps.”

Simply stated, the Vision for Space Exploration asserts that the proper goal of the nation’s space program is that of human and robotic exploration beyond low Earth orbit. After extensive and thoughtful discussion, the Congress explicitly and overwhelmingly ratified the President’s view last December. Quoting from NASA’s 2005 Authorization Bill, the Agency is directed to “establish a program to develop a sustained human presence on the Moon, including a robust precursor program, to promote exploration, science, commerce, and United States preeminence in space, and as a stepping stone to future exploration of Mars and other destinations.” The Vision for Space Exploration is the law of the land. It is now up to NASA to carry forward this Vision and other priorities of the Congress and the President within the resources provided.

This is a bold challenge for the American space program, and a lasting legacy for the astronauts who perished in the *Columbia* accident. Following our grief and self-examination three years ago, the President and Congress re-affirmed our national heritage as a frontier nation, with space exploration being that frontier. This is a challenge bold enough to last many lifetimes. And it is for this reason that I feel privileged to work at NASA at this critical juncture in the Agency's history. We have come a long way since the dark days of the *Columbia* accident, yet we have a lot of work to do to turn the Vision for Space Exploration into reality. So what I'd like to do now is to go over some of the steps that we have planned for the coming months and years.

First, the Vision for Space Exploration respects both old commitments and new dreams. The President has reaffirmed yet again our nation's commitment to our partners on the International Space Station. NASA will complete the assembly of the Space Station using the minimum possible number of Space Shuttle flights to do so, prior to its retirement by 2010. My hope is that by maintaining that commitment, our international partners will view NASA and the United States as good partners through thick and thin, good people with whom to team in future endeavors of space exploration and scientific discovery.

Second, we will build the Crew Exploration Vehicle to return to the Moon, and then later we will set course Mars, and eventually beyond.

We will help drive the creation of a new space industry in low Earth orbit and beyond in such a way that NASA becomes a reliable and supportive customer for that industry.

We will do these things in concert with other nations having similar interests and values. And, as we look forward to the events that will define this century and

beyond, I have no doubt that the expansion of human presence into the solar system will be among the greatest of our achievements.

In order to maintain momentum for this multi-generational journey, we must have a broad base of support among the American public. Exploration must become, in the public mind, nothing more or less than “what NASA does.” I believe that the greatest contribution that NASA makes in educating the next generation of Americans is providing worthy endeavors for which students will be inspired to study difficult subjects like math, science, and engineering because they too share the dream of exploring the cosmos. Space exploration is the most technically challenging endeavor that nations do, and it is also one of the most exciting and inspirational. I continue to be awed by rocket launches, even though I’ve seen dozens. I’m awed by pictures from the Hubble Space Telescope of galaxies colliding and gaseous nebula forming new stars. I’m awed by the bravery of our astronauts. I’m amazed by the insights our scientists discover about our home planet, and what they find out about other planets in our solar system. We need to share this sense of awe with the broader public.

Recent and very specific public opinion surveys do in fact show a broad consensus in support of our new goals in space. Assuming that funding levels for NASA do not exceed one percent of the budget – and we should be so fortunate – fully three-fourths of the American people support the goals of the Vision. This public support is distributed across both genders and both parties. But we cannot take it for granted. We must speak clearly and openly to the American people about the risks and rewards of space exploration and scientific discovery.

So, to put it simply, the President has proposed a civil space program that will correct the systemic problems identified by the CAIB and others. The

Congress and the American people support this program. It is now up to us in the space community to implement the charge we've been given. But, finally, we have the policy we have needed and wanted for almost two generations.

Policy is important. American progress in space since Apollo has not been what many of us here would have wished, precisely because we lacked a coherent national space policy. But as all of us in Washington know, budgets are just as important. Policy provides the necessary framework to link budgetary decisions across the years. But, in each and every year, the annual budget is the document that most clearly says what it is that we in government actually do. In this sense, each year's budget is, *ipso facto*, the nation's policy.

So this is a great time to address the National Space Club, because just three days ago the White House released the President's proposed FY07 budget. We're very gratified that the budget contains a healthy 3.2% increase in NASA funding over the amount appropriated for FY06. This will allow the agency to begin implementation of the Vision, to pursue development of the next generation of manned spacecraft and launch vehicles, to undertake other work to enable us to resume exploration of the Moon by 2018, and to conduct the first voyages to Mars after that. President Bush has provided NASA with the resources needed to fulfill the mandate to "build new ships to carry man forward into the universe, to gain a new foothold on the moon, and to prepare for new journeys to worlds beyond our own."

These are difficult fiscal times. We are a nation at war, a nation with many concerns. Overall non-defense discretionary spending is actually 0.5% lower than last year. Yet this budget shows real growth for NASA. This is the most visible evidence possible of the Administration's support for our agency at a time that

many believe to be the most difficult period in NASA's history. We in the space community should understand this.

But even with the increase we have received, I recognize that no one is getting everything they want from this budget for NASA. We simply will not be able to do everything, right now, that many in the space community may want us to do. I do not relish the fact that we cannot afford the costs and complexity of starting new space science missions, like a mission to Jupiter's moon Europa, or the next generation space astronomy missions beyond the James Webb Space Telescope. We must make difficult choices in setting resource priorities.

I do think that it is important to note that we are delaying missions, not simply abandoning them. We will still do the Space Interferometry Mission, the Terrestrial Planet Finder, and the Global Precipitation Monitoring mission. We will not do them right now. In making a decision concerning what to delay and what to keep on schedule to the extent possible, I determined that delays in starting SIM, TPF, and GPM would be less harmful to the space program overall than would further delays to the CEV program. I simply believe that further delays to CEV are strategically more damaging to this nation than are delays to other missions. I stand by this view.

Now then, two years past the President's key first step down a new path for NASA, where are we? Since the cessation of the Apollo expeditions, we in the space community have talked – talked endlessly – about resuming the exploration of the Moon, and about going one day to Mars. But as I speak to you now, amazingly and for the first time in 40 years, this is the actual day-to-day working goal of the agency. We have new expectations. Each day, each week, each month, and each year should yield measurable progress toward these goals. This is a new mindset for our community, one we must nurture carefully. At NASA, we must

reduce policy to practice, or exploration will always be the program of the future. So where are we, and what can you expect to see in the near future?

Our key accomplishment last year was to formulate a specific exploration architecture to enable the renewal of manned lunar exploration, and in a way that offers the maximum benefit for future missions to Mars. This is the architecture which will drive our flight vehicle procurement activities over the next few years. It gives us our flight plan.

The first element of this flight plan is of course the Crew Exploration Vehicle, or CEV. We translated the requirements of the exploration architecture into detailed requirements for the CEV, and the final RFP for this crucial new system is in the hands of the contractors who will bid on it.

For those of you who thought last year was busy for NASA, I want you to buckle your seat belts and place your trays in the upright and locked position. 2006 presents even more challenges. This year, we will re-start the assembly of the International Space Station, after fixing the PAL ramp foam debris. The next test flight, STS-121, commanded by Colonel Steve Lindsay, will help us determine whether NASA can safely return the Space Shuttle to its primary task of assembling the International Space Station. This next flight will also tell us whether the Space Shuttle can safely conduct a fifth servicing mission of the Hubble Space Telescope in 2008.

At the same time, we are working to define the savings by better integrating the workforce and hardware between the existing Shuttle and Exploration programs. I'm glad we were able to lure away Dave Radzanowski away from OMB to help us during this critical time. The transition between the Shuttle retirement and bringing the CEV online is the biggest organizational challenge we have faced since the Apollo-to-Shuttle transition, and requires NASA and industry

to work as a team toward this goal. We need your help in finding all possible synergies, contract efficiencies, and cost savings.

Beginning next month, NASA will be reviewing proposals from commercial industry for the demonstration of capabilities to deliver cargo and/or crew to the International Space Station in the 2008-2010 timeframe. We have asked for demonstrations of any one or combination of four capabilities: first, external unpressurized cargo delivery and disposal; second, internal pressurized cargo delivery and disposal; third, internal cargo delivery and return to Earth, and fourth, crew transportation. NASA has put its money where its mouth is by allocating a half-billion dollars to this program over the next five years, and the selected companies will receive NASA support in the form of progress payments as specified milestones are met in the course of this demonstration. However, NASA expects to see companies with “skin in the game” in order to win future Space Station servicing contracts to follow after a successful demonstration.

Let me be clear to all venture capitalists and would-be commercial outfits vying for this opportunity: If you successfully demonstrate a cost-effective, commercial re-supply capability to the ISS, NASA will welcome that capability and use it. We plan to use Space Act Agreements to award one or more fixed price contracts for this demonstration. In response to various complaints from commercial ventures about NASA’s administrative burden, we’ve actively worked to emulate best commercial practices and reduce unnecessary paperwork in this acquisition. We’re taking a risk, but I believe that it is a worthwhile risk for the good of the government and commercial space business. If your commercial offering succeeds, then NASA can focus on the next steps in space exploration rather than what should by now be the mundane tasks of cargo delivery. While NASA must demonstrate that it is a good customer for commercial industry, industry must demonstrate they can actually deliver those goods. This is a

necessary step to advance this vision, and we're approaching it with eyes wide open.

Regarding our external partnerships, I have asked Deputy Administrator Shana Dale to lead our Agency's dialogue with both other spacefaring nations and the commercial space industry. NASA's Science and Exploration Mission Directorates will support her by engaging the communities interested in these endeavors. To this end, NASA will sponsor a lunar exploration workshop in the spring, with the goal of formulating a comprehensive decadal strategy for lunar exploration. By the end of this year, we will have begun to define what our international partners, the various scientific communities, and commercial interests might do in exploring and utilizing our new frontier on our Moon.

Also, in the coming months, Scott Horowitz will report on plans for NASA's robotic precursor missions to the Moon. Needless to say, I have strong opinions about what NASA could be doing with these robotic precursor missions in concert with other international missions, but we must also be realistic on the cost of these missions. I especially want to express my appreciation for NASA's fruitful cooperation with the Indian Space Research Organization as our partner in exploring the Moon, as they plan to fly two NASA instruments on their Chandrayan spacecraft in 2007. NASA is also making plans for the Lunar Robotic Orbiter in 2008.

In conjunction with this lunar exploration strategy and following on its heels, I want to begin to lay more groundwork for our plans to explore Mars. Today, both Mars Global Surveyor and Odyssey are in orbit to map chemical elements and minerals on the surface. Likewise, the two Mars Rovers keep on going, well past their design lives. Next month, the Mars Reconnaissance Orbiter enters orbit around the red planet in order to take high resolution hyperspectral images of the Martian surface. The FY 2007 budget funds the launch of the

Phoenix Scout mission and Mars Science Laboratory in 2009 to collect Martian soil samples, analyzing them for organic compounds which are signatures for life. After that, we need to define the next series of missions to Mars in the following decade, building on the results from these missions. NASA will then make plans for carrying out manned missions to Mars, building on the heavy-lift launch vehicles, landers, and other capabilities from the lunar exploration architecture. We especially hope to have the support of our international partners for this long-term endeavor. NASA cannot afford to do everything that should be done, but working together we can achieve it.

Back here on our home soil, one of the unique management challenges in running an Agency like NASA is implementing the current year's budget, proposing the next year's budget to the Congress, and formulating priorities for the years to follow. Just as we've delivered to the Congress the FY 2007 budget last Monday, we're now formulating our priorities for the next fiscal year. We're taking the steps necessary to ensure that NASA has ten healthy field centers known for technical excellence to carry out NASA's mission of space exploration, scientific discovery, and aeronautics research. This year we're going to be taking a hard look at NASA's "tooth-to-tail" ratio between administrative and overhead costs compared to the funds that could be applied to real research and development. In this analysis, we hope to strengthen our workforce, facilities, and capital assets to carry out our national priorities in space and aeronautics, and to establish appropriate roles and responsibilities with our sister government agencies like the Air Force, Navy, National Science Foundation, and others.

Our management team is dedicated to leaving NASA a stronger institution for the next generation. By the conclusion of this President's term in January 2009, I want NASA to have established a bold action plan for American leadership

in space exploration for the 21st century. America needs to explore again. Let's turn this Vision into reality.

Thank you.