May 17, 2010

Honorable John D. Rockefeller, IV
Chair, Committee on Commerce, Science & Transportation
United States Senate
SD-508 Dirksen Senate Office Building
Washington, DC 20510

Dear Senator Rockefeller,

I write this letter, as an Apollo astronaut, to state my strong support for the proposed NASA space program as modified by President Obama in his April 15, 2010 speech in Florida. I, like many of my fellow astronauts, am greatly concerned that our nation's historic leadership in space exploration is eroding to the point where we will shortly lose that title. We Apollo-era people gave the United States everything we had to regain leadership in space from the Soviet Union back in the 60s and we hate like hell to see it drift away from us now.

With what I believe to be the coming loss of US leadership in human space exploration in mind, the question of how best to regain that leadership breaks into two fundamental elements; our current situation and our direction going forward. In terms of relative importance I weigh these at 80% and 20% respectively.

Our current situation is akin to being on a dead end road. Instead of being on a path toward the goal we all seek, i.e. to regain our leadership position in human space exploration, we must recognize that we are (and have been) on a path to nowhere. We are confronted with arguments to ignore the clear signs of this sad situation and even encouraged to accelerate along this futile path.

The alternative to this is support for the President's proposed plan. It recognizes and eliminates the waste of precious resources in the current program and heads us in a productive direction toward our desired destination. In other words, when you recognize you are on a dead end road, stop, turn around, and head in a direction more useful to your goal.

Are we, in fact, on a dead end road? In answering this critical question you should not overvalue either my opinion or the opinions of my fellow astronauts, but rather focus on the considered and thoughtful, and even hard-nosed, analysis of the panel of experts who dealt explicitly with this, the Augustine Committee on our Human Spaceflight Program. Norm and his panel are very experienced and highly qualified academics, business leaders, astronauts, and space program executives. I have immense respect for them and their considered judgment. They performed a thorough, open and difficult review and analysis of where we are. Their conclusions were not reached lightly nor did they shy away from calling it as they saw it. I take their work and their conclusions very seriously and I believe you should as well.
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As well as their long and hard review of where we are in our existing human spaceflight development the Augustine Committee also considered many options for a path forward. While not using the words “dead end” they concluded that the existing program would , even with $5-7B of additional funding, not get us to the moon, let alone land or establish a base there until well into the 2030s…”if ever”. and in the end, while not making specific recommendations, they rated their “flexible path” option, 5b, very highly. The Obama administration and NASA leadership ultimately decided on a program very similar to and based on the Augustine Committee’s option 5b.

While I will not attempt to comment on many of the elements of the proposed program I would like to make a few specific comments which will inform the basis of my support and might prove helpful in your consideration.

Virtually everyone involved in the future of our US human space exploration program shares the identical long term goal of the human exploration of Mars. The issue is now and has been choosing the best way to build to that ultimate capability. It is my belief that going back to the Moon (i.e. the Constellation program) is neither necessary nor appropriate nor feasible in this regard.

Technical arguments can and have been made to support this intermediate step, and they are not without justification and support. Nevertheless, in my opinion, the arguments for necessity are fundamentally weak, and in any event are overwhelmed by the widely held and devastating question “been there; done that… tell us why you’re doing that again?” Why, after 60 years, should we be devoting incredible resources and effort to going back to the Moon instead of to a challenging, pioneering new goal? As Norm Augustine stated in your 12 May hearing, the long term space program has to be supported on a continuing basis by the public, and the public simply will not maintain support to reliably sustain a monumental and expensive effort to do again what we did 60 years before. This is especially true of young people, who are hardly inspired by a goal of repeating their grandparent’s achievements.

Happily there is an intermediate Mars trajectory which, in my opinion, makes much more sense. It is new and exciting and, I believe, will garner wide public support. That intermediate goal is to send our astronauts on a mission into deep space, to a near-Earth asteroid.

Deep space is a term easily used but not well understood. Orbiting the Earth, whether high or low, and even going out to the Moon is operating in Earth-space, or Earth/Moon-space. I.e. the gravitational field of the Earth dominates the behavior of all space objects. Deep space is dominated by the Sun. This is a new, and very different environment. Orbiting the Earth takes an hour and a half, or at lunar distance 28 days. Orbiting the Sun takes a year, or at Jupiter’s distance 12 years. Reaching deep space requires leaving earth space totally. Mars is in deep space. Sending astronauts to explore an asteroid (i.e. a near-Earth asteroid or NEO) requires us to go into deep space. By extending our capability into deep space to explore an asteroid we will be taking a big step beyond going to the Moon, but

relatively speaking, a small step compared with going all the way to Mars. It is also important to note that sending astronauts to explore an asteroid is less expensive than a return to the Moon's surface. This is therefore, both an imaginative, new, and logical goal, and a natural step in developing the capability for the human exploration of Mars. Furthermore the public interest and support for US astronauts exploring an asteroid, a new and very different "world", would be strong.

In addition to being a feasible and appropriate goal for human exploration, there are other extremely powerful reasons to identify asteroids as a primary new goal for space exploration. Specifically they occasionally threaten life on Earth as the result of an impact, they are fascinating scientific objects, and they contain (relative to the Moon's surface) a wealth of valuable resources which we may one day choose to access to minimize the cost of space operations. My own work over the past decade has been to assure that using our space capability we are able and prepared to divert an asteroid when we find one threatening an impact. This, however, is a fascinating discussion for another time. The point here is that near-Earth asteroids are a multi-faceted, fascinating and valuable intermediate step on our way to Mars, and a far more interesting and appropriate goal for human exploration than going back to the Moon.

Finally, I would like to comment on the issue of the "gap" and the proposed reliance on commercial providers to close the gap and re-establish our US human launch capability.

The sad state of our current space program, and the gap in particular, is a given. An unfortunate, but unavoidable given. We are here because of the complete mismatch between the program announced by President George W Bush in early 2004 and the inadequate funding which was subsequently sought and allocated since that time. As Norm Augustine testified before your committee on May 12, in the 4 years between the announcement of those ambitious goals and the time when his Committee conducted its comprehensive review of human space flight, the Ares launch vehicle development slipped between 3 and 5 years. This slip, combined with the planned termination of Space Shuttle operations in 2010 created and ultimately extended the "gap" in our nation's ability to launch astronauts into orbit to 7 years or more. This gap, during which time we will be dependent on the Russians to launch our American astronauts to the ISS, was created during the prior space program. It is a given and it cannot be eliminated.

The Obama program proposes, given realistic budget projections, to minimize this gap in indigenous US launch capability by transitioning from the past practice of NASA "owned and operated" launch services to leasing these services from US commercial companies. Whether or not a safe and reliable capability of this kind can be developed in this timeframe is yet to be seen. However, without a commitment to this shift in acquisition of launch services, NASA, and the US Government, will be locked into developing and providing well understood transportation services which should rightly be relinquished to private enterprise. If NASA stays in this business, industry cannot compete. Taxpayer money will, in effect, be used to inhibit the

development of an independent, private, commercial capability with a huge upside potential for jobs and, indeed, world industrial leadership.

NASA should, as proposed by the new space program, continue to encourage and assist US enterprise in meeting the performance and safety requirements inherent in flying both cargo and people to low Earth orbit without absorbing all of the cost. This cooperative effort would both minimize the existing gap and bring into being an exciting, new US industrial capability, replete with industrial innovation and job creation.

Is this risky? Of course it's risky. All space activity is risky. But wisely accepting and managing this risk will ultimately lead to a new and exciting US business capability which will be the envy of the world. The alternative is for NASA to continue to divert its precious human and economic capital to a challenging but very well understood transportation service rather than toward pioneering new and more advanced technology.

No program in the past 50 years has created more excitement in young people, more of a demand for education, or more technological innovation than the Apollo program. Apollo called out the best in all of us. Those of us who were fortunate enough to work directly and indirectly to meet President John F. Kennedy's goal will never forget the fantastic experience of giving our all to meet that grand challenge. Was that challenge bold and risky? "You betcha!" And indeed were it not for the demands of that challenge, including the uncertainties and inherent risks, we as a nation and a family of space geeks would not have come together as we did to make it a success. We are a nation of risk takers and innovators. It is in our blood.

Is going back to the Moon after a 60 year gap going to generate and maintain that same sort of excitement, innovation and determination? I do not believe so. Will setting a goal of sending American astronauts into deep space to explore an asteroid, up close and personal generate it. I do believe that it will.

I request that this letter be added to the testimony record of the May 12, 2010 hearing on The Future of U.S. Human Space Flight.

Sincerely,

Russell L. Schweickart
Apollo 9 Astronaut

Cc: Senator Bill Nelson, Chair, Subcommittee on Science and Space
Members, Senate Committee on Commerce, Science & Transportat