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Dear Norm,

I very much appreciate your invitation to speak to the Commission. I hope for a wide-ranging discussion of civil space policy objectives, NASA's progress to date toward meeting those objectives, and possible alternative paths. I will take this opportunity to document my own perspective on a few of the issues which have been and are being brought before you.

My views are of course colored by my recent tenure, in very turbulent times, as NASA's Administrator. However, the preponderance of those views derives from observations made and conclusions reached over the course of a long career, now more than thirty-eight years in duration, in our nation's aerospace and defense industry.

As I write this, NASA and the Constellation Program are the targets of broad but shallow criticism. This is because the consensus reached within the last administration and by two prior Congresses as to what the broad objectives of the nation's civil space program should be, is not fully embraced by all members of the space community. Your Commission is a response to that discord. But, while there is discord, there is no consensus among the discordant as to what the alternative path should be.

Thus, your Commission bears a heavy responsibility. Though you are formally charged only with developing "options", I think we all understand that this is Washingtonspeak at its worst. No one in the administration will ever know as much about NASA's human spaceflight program as you are learning this summer. It will be very difficult for the administration to repudiate a worthy, sensible option advocated by its own Commission. You must offer options, but what you conclude about the relative merits of those options will matter. It should matter. At the same time, not all of the options being advocated to you are, in all honesty, responsible, sensible, or worthy of a great nation.

Despite what some have said, Constellation is a carefully designed architecture put forth in response to a statement of broad civil space policy objectives by the last administration, which objectives were strongly supported in a hard-won consensus by two successive Congresses. I, and those at NASA who are responsible for its initial design, subsequent refinement, and present day execution, consider Constellation to be the most expeditiously attainable, broadly capable, lowest risk, and lowest life cycle cost design of which we know to meet those policy objectives, from among the many, many options we considered.

If the goals and objectives of our nation's civil space policy should change, or if the detailed engineering analysis which leads to the conclusions I offered above is found to be incorrect or incomplete, then of course Constellation can, and possibly should, be changed. But one must

be cautious in such assessments. As I recently offered in another venue, your viewgraphs will always look better than my hardware.

In what follows, I will briefly address several of the points of discord which I know have been brought before you. The first of these is whether or not NASA should be allowed to build a new system to provide human access to low Earth orbit (LEO), and if so, what that system should be.

Much of the present discussion about what should be done in human spaceflight is rooted in concerns about money. In fact, I would go so far as to say that if NASA were receiving today the budgetary allocation that was stipulated when the Vision for Exploration was announced in January, 2004, this Commission would not exist.

NASA's funding in constant dollars declined during the Clinton Administration by about 20% from its level in FY93. The Bush Administration halted, but did not reverse, that decline, and the present Obama Administration budget allocations for NASA do not reverse it either. In current dollars, NASA today receives some \$3+ billion dollars per year less than would be the case had the agency merely kept pace with inflation in the last sixteen years. For the space program, past and future, this is an enormous reduction, yet no essential mission responsibility has been removed from NASA as a result. Indeed, tasks have been added. This strategy cannot work. A safe and robust human spaceflight program cannot be built "on the cheap". I personally believe that it is long past time to face this fact. Present budgets are adequate to allow us to continue human spaceflight operations in low Earth orbit (LEO), but not much more. If policymakers do not wish to spend more, then we should stop talking about larger goals. As I write this, the most recent presidential budget request contains language supporting human lunar return by 2020, but that goal is unattainable with the funding allocated in the request.

Moving from budget to strategy, it is being variously offered that NASA's design for LEO access, Ares 1, is deeply flawed, that NASA should be directed to fly on a man-rated variant of EELV, or that NASA should not be "allowed" to have access to LEO at all, other than through the purchase of commercial service, when and as that may materialize.

I will refrain from a detailed engineering discussion concerning why it is that I believe that NASA's engineering approach to LEO access with Ares 1 is the right choice. I'm happy to discuss it if asked, but you can obtain such assessments elsewhere. The more crucial issue concerns the oft-touted option of prohibiting NASA from developing a new system for human access to LEO, and relying upon commercial service only.

It is my considered judgment that the capability for independent and assured human access to space is strategic for the United States. It affects our standing in the world; it is a cultural 'canary in the coal mine', having much to say about what sort of people we are or can claim to be. With that said, it follows that it cannot be left solely to the discretion and ability of private entities, whose interests can never, and should never, be wholly aligned with those of government, to provide such capability. It is one thing to say, as I have on many occasions, that we should purchase commercial service in lieu of utilizing government systems when the

former becomes available. It is another thing entirely for the very existence of a strategic capability to be held hostage to the vagaries of the marketplace.

Next, you have heard many who question the value of the lunar goal, whether for scientific sortie missions, or to use the moon as an important step on the way to Mars, or to establish a long-term presence because of the moon's own intrinsic interest and value in the future of human affairs.

At this point I will note, as I have in other forums, that Constellation was specifically designed to enable access not only to LEO and to the moon, but also to the near-Earth asteroids, the Lagrange points, and to provide the early elements necessary for a later voyage to Mars. Those who advocate other system design approaches to reaching these destinations like to claim, of course, that their ideas are faster, cheaper, and better. Such claims can be adjudicated by means of careful engineering and cost analysis. But those who claim that Constellation is designed only for the moon are purveying a canard. Constellation was designed to allow future policymakers, those who must fund and own the decisions, to allocate their own weighting factors to the relative importance of a human lunar presence in comparison to other goals. Constellation is designed to provide human access to the inner Solar System.

The desire to skip the moon and go to Mars arises from the view that the moon is uninteresting -- but how do we know that? For my part, the lunar goal continues to hold appeal, for several reasons. Others may differ. But how do we actually know, without a substantial effort to explore and understand what our closest destination has to offer?

Most who would abjure the moon seem to favor either doing nothing, or proceeding to Mars as the next step. I will dismiss "doing nothing" as being unworthy of our nation. However, I think the question of whether a voyage to Mars should be the next major goal of the U.S. human spaceflight program deserves careful consideration. Such a proposal gives rise to several concerns, which I think must be addressed to avoid failure of one kind or another.

If, as I have noted above, money is at the root of the present discussion about strategic goals for human spaceflight, the first thing to note is that bypassing the moon and going to Mars does not save any money. We would not need a lunar lander, but would certainly need Ares 5, as well as many other systems and capabilities we don't presently have -- dual-pad Ares 5 capability at KSC, new space suits, life support, habitats, space nuclear power, nuclear upper stage development (?), long-term cryogenic storage technology, etc. If "going to Mars" is to be a real program and not just a technology development exercise, it needs real money in the near term.

Mars as a goal is far off even if made the new priority. It will always be easy, in any budget year, to remove near-year money with promises to restore it later. Of course, when "later" arrives and the money does not, the schedule will slip, but there will not be a sense of urgency about such slips. One of the huge values of Kennedy's Apollo goal was that he set a hard, but feasible, date. It caused people to commit, or make a clear decision not to commit,

immediately. The value of such decision points in bringing focus to a program cannot be overstated. The direct-to-Mars goal cannot provide such focus.

When we do reach Mars, the crew will be there for awhile, and will in total be gone from Earth for several years. Committing to such a voyage without the experience of learning to live off-planet, on the moon, for months at a time has always seemed to me to be unnecessarily foolish. I think it raises the risk level in many ways, most of which are regrettably unforeseeable today. They will be obvious in hindsight to the future presidential commission which is convened to assess the failure.

Abandoning cislunar space to others while the U.S. embarks on a Mars project, even an international project, seems to me to be geopolitically unwise. When other nations are conducting high-profile missions in cislunar space and on the moon, and we are still talking about going to Mars, we will no longer be seen as a leader in space. I think this matters greatly.

In closing, when we talk about offering programmatic "options", I think we miss a key point, because such options are always couched in terms of "or" arguments -- humans or robots, moon or Mars, NEOs or moon, and so on. Our goal should be broader than any single option.

Quite simply, the goal of the United States should be to be the leader in creating tomorrow's spacefaring civilization. To do that, we have to replace "or" with "and", we have to be prepared to exploit what we find and to take advantage of the options we create. If that is the real goal, then because we cannot do everything at once, it we must discuss the order of progression. But we must recognize that a single-point focus on any one destination, even Mars, is not of great long-term value.

If the preceding is accepted, it follows that such goals will not be achieved within any single session of Congress or presidential administration, or even within any single generation. We must understand that to lead in creating a spacefaring civilization requires a continuity of purpose akin to that we require of our military services. For example, we may at a given time decide to emphasize one jet fighter design over another, in order to provide what is believed to be a better solution to a current challenge. But we do not ask, every four years, what should be the purpose of the U.S. Air Force. The long term development of human spaceflight requires a similar perspective if it is to happen. If we are not able to muster that perspective, we can be assured that others will.

So I would say to the Commission: do not close off options. Do not allow the parochial voices of the small-minded, the self-interested, and the uninformed to prevail. Choose the future.

Sincerely,

Michael D. Griffin