Written Testimony of

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Thank you, Chairman Hall, Ranking Member Johnson and Members of the Committee for this opportunity to once again express my personal views and concerns over the future of our nation's space program. In the short time we have available here this morning, I will do my best to adequately address the questions in your letter of invitation.

The Past:

Because the theme of this hearing is "**Spaceflight – Past, Present and Future"**, and because as you, Mr. Chairman, suggested that there are some on this Committee who might well be a generation or more removed from Apollo, I choose first to address the past because I believe it important to go back in time and re-trace our path through history to the day from which we were destined to become the world's leading space-faring nation. As we now look to the future, I consider the past vital so as to fully understand what it required to become the unchallenged leader in the world of Space Exploration.

Lest we forget, Mr. Chairman, it was a bold and courageous President over a half century ago who started us on a journey to the stars – a journey from which America would never look back – and a journey that challenged the American people at every crossroad to do what most thought couldn't be done. It was a challenge that came in the "terrible 60's", at a time when our nation was shackled by civil strife, campus unrest and the beginning of what became a very unpopular war – and perhaps foremost, it was a challenge to the then Soviet Union's dominance in space. To meet that challenge required all the dedication and personal commitment our nation could muster. And, it was not going to be easy, but hard and did require sacrifice, just as John F. Kennedy said it would. However, being second best was unacceptable then and being just good today is never going to be good enough for the American people.

JFK did not just challenge us to go to the moon – he believed it was time to take a leading role in space – a role he thought might well hold the key to our future on Earth. So we built upon

the uncertainty of Mercury, fabricated Gemini, the bridge to Apollo, and then realized the dream of mankind for eons of time when over 40 years ago we were able to call the moon our home.

But we did not quit there – before the end of Apollo in 1972, Skylab – man's first orbiting laboratory – was ready to fly; the Space Shuttle, perhaps the most capable flying machine ever designed, built and flown by man, was already on the drawing boards; and today the International Space Station, the assembly of which may well go down in history as man's greatest engineering accomplishment of all time, circles the globe sixteen times every day – all in keeping with JFK's challenge to go to the moon "and do the other things." Along the way, thousands of young Americans, who, inspired by what was happening around them, became doctors, engineers, teachers, scientists, and even university Presidents – a "stimulus" for education unparalleled in our history. The above constituted a logical progression with the purpose of achieving and then maintaining our position as the world's leading space-faring nation. And with it came the development of technology which allowed us to satisfy mankind's insatiable quest for knowledge – all on that ocean on which we "set sail" a half century ago. For 50 years, Mr. Chairman, we were caught up in the inertia of growth, where each day brought new revelations about the unknown – our curiosity was overwhelmed with more questions than answers.

The Present:

However, today we are on a path of decay. We are seeing the book closed on five decades of accomplishments as the world's leading space-faring nation. As unimaginable as it seems, we have now come full circle and ceded our leadership role in space back to the same country, albeit with a different name, that spurred our challenge five decades ago.

What measures are needed to reverse this inertia of decay? Based upon history the long-term solution appears obvious. One only has to look back and learn from history to understand what it will take to once again be the world's leading space-faring nation. We eventually need an Administration that believes in and understands the importance of America's commitment to regaining its pre-imminence in space. An administration which will provide us with a leader who will once again be bold and challenge our people to do what history has now told us is possible. We must have a forward looking independent NASA who can advise the President, manage far-reaching programs, and work with a bi-partisan Congress in moving forward with a space program that benefits all Americans. And a NASA that realizes the importance of looking back in history – learning from our mistakes and building upon the successful culture of a government-private industry partnership that has endured throughout the life of our space program developing safe and cost effective space exploration systems.

The short-term solution is more complex in light of NASA and the present Administration's now obvious agenda to dismantle a space program that has been five decades in the making. First on this agenda was to cancel Constellation – a $10 billion investment five years in development. Embedded in the Constellation architecture was the culture of a long-range building block that could not only service the ISS, extend the life of Hubble, provide national security, but

additionally would be capable of carrying us back to the moon and on to Mars. To replace Constellation was a "mission to nowhere" which had no near or long-term goals, time table, specific destination, and no direction for Human Space flight – and nowhere were there any specific plans for the design and building of hardware should any part of this agenda be overridden by Congress. Then came a decision to subsidize the commercial sector to "whatever extent it might take to make it successful" – a program that appears to have little or no transparency or NASA insight or oversight into existing problems or those that past experience has told us will crop up in the future. My thoughts on the commercial space claims are well-known. I stand behind my assertion that it will be near the end of the decade before these new entrants will be able to place a human safely and cost effectively in Earth orbit. Now we have the termination of the Space Shuttle with, until recently, nothing on the Administration's horizon to replace it. It wasn't but a few months ago we had the most capable operationally proven launch vehicle available far into the future giving us unprecedented personal and payload access to low Earth orbit. Additionally, the Shuttle had the potential of being the catalyst for the assembly and return to Earth for deep space missions resulting in weight and performance advantages. Even if not in future plans to be the primary lift to LEO, the Shuttle certainly provided us with a versatile and redundant operational system. Isn't it ironic that we find ourselves today with no, zero capability to access the ISS? I believe the Shuttle retirement to be a poorly thought out and pre-mature decision. I take no solace in the failure of the last Soyuz booster, but if one examines the recent letter from Dr. Chris Kraft to Charlie Bolden concerning this and other problematic contingencies, serious questions could be asked. This letter requested only that the decision on Shuttle retirement be reconsidered in light of the fact that there was nothing to take its place for some indeterminate time in the future. I find it extremely disrespectful that, to my knowledge, Dr. Kraft has never to this date received a response to his personal letter.

Space Launch System (SLS):

Of record is the NASA Authorization Act of 2010 in which the plans were outlined to build a heavy lift vehicle with Congressionally appropriated and authorized required funding. Several independent cost assessments as well as NASA itself verified that the program was technically and financially feasible as planned. Until this past week, NASA had continued to disregard, ignore, and flaunt the law and the mandate of the Congress while continuing to pursue its own agenda of disabling our nation's space program. It had become obvious that NASA as directed by the Administration has had no interest in following the law and the mandate of Congress in the development of a heavy lift launch vehicle.

It is only now after mandates, requests, investigations, a subpoena, and a stinging rebuke of the Administration by two very prominent Senators that NASA has retreated on its delaying tactics to move forward with the development of a Space Launch System (SLS). This is certainly good news forced upon the Administration by concerned and wiser members of Congress, but this decision could well leave us hostage to Russia for access to the ISS for some time to come. Is it possible that the Administration's delay tactics in committing to the SLS somehow has its origin in the delays anticipated in commercial space's development of the capability to put a human in LEO in the foreseeable future?? My assessment of NASA's progress in the development of a

heavy lift launch system to enable exploration beyond Earth orbit, as well as provide a capability to service the ISS should a commercial market entrant or our international partners become unavailable, is that it has been deceptive, inadequate and to date non-productive.

The Future:

Should the development of the SLS go forward as mandated by Congress along with the Orion Spacecraft as just announced by the Administration, I believe we will have the best and perhaps only opportunity within reach to narrow the gap that now exists between the final Shuttle flight and America's capability to regain access to Earth orbit and the ISS. Access to low Earth orbit should be our primary objective in any plans in the evolutionary development of a new versatile lift vehicle with future deep space missions as a follow on. This, I understand, is the mandate from Congress. Although it is the intent that the "full up" SLS give us the capability of designing a variable set of missions, I firmly believe that the time for a well thought out long term initiative for our nation's role in space, with or without the SLS System, is long overdue. The "Mission to Somewhere" logically points to the moon, thereby building the foundation for a voyage to Mars. Unfortunately, it might well be a generation or more before the U.S. once again exerts its influence in Space Exploration beyond Earth orbit. "If we don't know where we are going, we might end up where we are headed." Nevertheless, since we have apparently decided to relegate the final Shuttle to a place in history, it becomes even more imperative that we move forward quickly and confidently on a LEO derivative of the SLS that can satisfy our urgent near-term requirements to access low Earth orbit.

Risks and Challenges:

As a consequence of the cancellation of Constellation, the termination of the Space Shuttle, and NASA's continued unwillingness to accede to Congressional mandates thus causing unnecessary delays over the past two and one-half years, the risks and challenges to NASA and the aerospace community are numerous. My immediate concerns are the deterioration of our technological base, the lack of stability of the NASA budget when considering the present state of the economy, the absence of the Administration's commitment to cooperate with Congress and forge an ambitious program, the question of continued bi-partisan Congressional support, and perhaps the most important risk with lasting effect, is the loss and dismemberment of our skilled workforce.

As a result of these factors, uncertainty and instability abound. Among the thousands of highly educated workers with unique skills developed over generations, once we lose the older, wiser, mature and experienced folks to retirement, who spent in some cases over five decades learning "what they didn't know they didn't know", along with those inspired and enthusiastic young minds of today's generation to other endeavors, inertia takes hold of the downward trend and it is difficult, costly and near impossible to reverse. And those young high school and college students whose dreams were to take their generation back to the moon and beyond are now questioning their plans to seek studies in science, engineering and math in the future. And for those fortunate few still at work within NASA or its contracting team, without a goal or mission, their future is bleak. Under this cloud of uncertainty most are seeking stability for

themselves and their families by going elsewhere with their talents. I believe therein is the ongoing risk and challenge this country faces in any potential future development of human space systems. It's important to remember that "technology makes it possible, but people make it happen."

Testimony of May 26, 2010:

Very little if anything has changed my assessment of the Administration's space policy since my testimony before this Committee over a year ago. I recounted the words of my colleagues and myself in describing the Administration's plan for the future of Space Exploration – "Devastating", "Slide to mediocrity", "Third-rate stature", "Mission to nowhere." Although with the SLS System we will provide the foundation for designing "missions to somewhere" – they have yet to be defined. So today I stand behind my testimony and convictions of sixteen months ago. Nowhere did I find then nor do I find today one penny in the FY2011 budget proposal in support of Space Exploration. Although I do believe and hope that someday they will succeed, I still assess that those entrepreneurs in the world of commercial space who continue their claims of being able to put humans in space in little more than three years for something less than $5 billion, today still "don't yet know what they don't know." My statement that "the sole reliance on the Commercial Sector without a concurrent or back-up approach could very well lead to the abandonment of our $100 billion, 25 year investment in the ISS" is now more prophetic than ever.

"The space program has never been an entitlement, it's an investment in the future – an investment in technology, jobs, international respect and geo-political leadership, and perhaps most importantly in the inspiration and education of our youth. Those best and brightest minds at NASA and throughout the multitudes of private contractors, large and small, did not join the team to design windmills or redesign gas pedals, but to live their dreams of once again taking us where no man has gone before. If this Administration's agenda continues to override the mandates of Congress, these technicians, engineers, scientists, a generation removed from Apollo, yet re-inspired by the prospect of going back to the moon and on the Mars, will be gone – where I don't know – but gone." Sixteen months later, the absence of a well-defined NASA program has already resulted in the loss of thousands of jobs throughout the aerospace industry.

"America's human space flight program has for a half century risen above partisan differences from Eisenhower to Kennedy to the present day. The challenges and accomplishments of the past were those of a nation – never of a political party or of any individual agenda." Proven to be true today by the overwhelming Congressional support and mandates to NASA in support of future space developments.

"We are at a cross road. If we abdicate our leadership in space today, not only is human spaceflight and space exploration at risk, but I believe the future of this country and thus the future of our children and grandchildren as well. Now is the time for wiser heads in the

Congress of the United States to prevail. Now is the time to overrule this Administration's pledge to mediocrity. Now is the time to be bold, innovative and wise in how we invest in the future of America. Now is the time to re-establish our nation's commitment to excellence."

Mr. Chairman, Ladies and Gentlemen – **it not about space – it's about the country.**

Thank you for your time and patience.

Sincerely, and with respect,

Eugene A. Cernan
Commander, Apollo XVII