Prepared Statement

of

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before the

Subcommittee on Science and Space

Committee on Commerce, Science, and Transportation

United States Senate

Wednesday, February 24, 2010

Thank you, Mr. Chairman, for the opportunity to appear before your Subcommittee today to discuss the "Challenges and Opportunities of the Proposed FY 2011 Budget for NASA."

My name is Mike Snyder and it has been my honor and privilege to work on the Space Shuttle Program for the past 13 years. I am not a civil servant, a CEO of a major aerospace corporation or even a member of senior management. I am an engineer and one of the tens-of-thousands of people across America who work daily on this Nation's efforts in human spaceflight programs. The views you hear today are my own but I can assure you they are representative and shared by many in the aerospace workforce at large.

It has always been my dream to be a part of the Space Program, and even as a kid, I never wanted to do anything else. This is more than just a job to me. It is a passion. It is about diligence and dedication. It is about service and about being part of something greater than myself. However, my story is not unique as these feelings and beliefs are shared by countless others who make up the backbone of any undertaking this Nation makes with regard to spaceflight and exploration.

The Space Program is often referred to as a national asset, an asset that has, does and hopefully will continue to set the United States of America apart from all other nations. By extension, that same reference could and should be applied to the men and women that make it all happen. However, I cannot escape the impression now of being taken for granted, of being considered expendable. It seems to be assumed we are to quickly adapt and possibly relocate our families and reorient our lives easily. Perhaps most importantly, in the workplace, we are expected to compartmentalize all the unknowns and concerns about everything we have worked for seemingly slipping away and still do the job, the mission, we know we have to do. Today, I must inform you that morale across the entire human space flight workforce, civil servant and contractor, is extremely low. The lowest I have seen it in all my years of service.

Perhaps the single biggest contributor to the low morale is the perceived lack of any vision, purpose or detailed plans with clearly defined goals, objectives and timetables for the future of human spaceflight. We can all agree that Research and Development (R&D) is vitally important. However, R&D without direction and purpose, without a planned and well-defined operational concept is no more useful or

sustainable than assuming we can explore the solar system and beyond without development of new technologies. I cannot stress enough the importance of having an over-arching program with clearly defined goals that focus these R&D efforts to near term as well as long term capabilities with the intent and strong National will to use them. Congress must not let our Nation fall into the trap yet again that vaguely ties these technologies and capabilities to some future date, future Administration and future Congress - because that way will ensure, in my opinion, that these expensive initiatives never bear fruit and will serve only as a disservice to this industry's current and future workforce and to the United States of America as a whole.

Along these lines, we are all told by our Center Directors, company CEOs, and our senior management that more information will be communicated about the direction of the Agency. However, the problem is that they do not yet know either. What the everyday worker does know is the inescapable fact that two of three of this Nation's major human space flight programs are proposed to be terminated. We are told by senior Agency officials that this will ultimately be good for every center, even if that does not make logical sense to us. We also know that it can be a lengthy process to chart a new course, request contract proposals, to negotiate contracts, and to turn that work on so people can do that work.

The question we are left asking is how can all of this possibly happen in any reasonable amount of time? The answer, many of us believe, is that it will not, given the fact we are only seven months away from the proposed end of these programs. With that knowledge, we non-civil servants are forced to choose: do we risk completing a program that was at one time in the Nation's best interest, and in which we have personally invested so much, then to find there are no jobs and that our dedication has been at the expense of our families? Or do we leave now, potentially abandoning our careers in a field and in a cause we find important, worthy and noble in order to assure our families are properly cared for? These are the questions we face and each of us will have to answer individually - but for the Nation the result will be the same: a workforce with valuable and unique skills and experience that will be greatly diminished or lost completely and one that cannot be rebuilt without significant time and effort.

Contributing to the workforce dilemma is the arbitrary 2010 retirement date of the Space Shuttle that is now upon us and all the consequences that brings. Those of us who have worked on this program for the last several years obviously knew the end of the Shuttle era was coming. We had hoped that we could "pass the torch" onto a follow-on program, but now, it looks more like we are simply extinguishing it. The Space Shuttle's main reason for existence and its primary mission was the construction and periodic resupply of a space station. By the end of this year, that mission will still only be partially complete. It would be far easier to stand down this unique capability if there were other vehicles ready to fill the void Shuttle retirement will surely create.

However, as of today, no American replacement vehicles exist that are operational and this Nation is hinging the sustainment and full utilization of the International Space Station, our one-hundred-billion-dollar investment twenty-six years in the making, on the hope and assumption that Russian, Japanese, European and unproven commercial vehicles will provide adequate personnel and logistic support to the ISS. In my opinion, this is a strategic mistake of vast proportions and one that requires the utmost reconsideration and serious attention from all levels of government. We are on the verge of giving up the inherently robust and flexible capabilities of the Space Shuttle, capabilities that are unique to this

world and not likely to be duplicated by any nation or any company in the near future, simply because we choose to do so. Instead we have chosen to rely on a foreign nation as the sole method of transport, for an unspecified amount of time, to a space station which owes its very existence to U.S. leadership and has been so heavily funded by the American people. In general, this has been interpreted as a lack of faith from our government in our ability to fly the most capable vehicle to ever orbit and return to the Earth in support of the ISS, all so we can reallocate the approximately eight one-hundredths of one percent that represents the cost of the Shuttle Program to the Federal budget to something else.

Those of us that work on the Shuttle Program daily hear a lot about how the Orbiter is an aging vehicle on the verge of falling apart, that it has outlived its usefulness, that it is inherently unsafe and other more colorful analogies. This is the incorrect perception that constantly challenges us. As someone with intimate knowledge of our processes and procedures, I assure you each Space Shuttle flight is as safe as it can possibly be. Anyone who thinks otherwise, I invite you to Johnson Space Center, Kennedy Space Center, Marshall Space Flight Center, our other field centers, our various support and depot facilities or the countless vendors still supporting across this country. Spend a day with the everyday workers and see our attention to detail, how we rigorously test and inspect the vehicle before every flight, how we work problems to "pound them flat", how we run countless simulations and how we manage, minimize and accept, or do not accept if the situation warrants, the risk that is and will be associated with sending humans into space for the foreseeable future. It is time to challenge the misconceptions about the Space Shuttle that have been so carefully promoted over the last several years, simply to help justify using the Space Shuttle budget for other activities.

To help dispel those misconceptions, allow me to cite just a few of the newer capabilities that make the vehicle safer than at any previous time in the Program's history. The External Tank has been significantly improved to reduce the likelihood of losing foam that can harm the Orbiter. There are cameras on and around the vehicle we did not have a few years ago giving spectacular views never before seen but, more importantly, provide invaluable data on the performance of the integrated stack during launch and ascent. We have capabilities on-orbit that allow us to know in near real-time the structural integrity of the vehicle and the state of the Thermal Protection System. This allows the opportunity to rigorously evaluate, and if necessary repair in some conditions, all abnormalities long before ever committing to entry. We have worked an effort for the past seven years addressing all critical and critically redundant component and system level certifications verifying we "fly how we test and test how we fly" and in some cases making the appropriate changes or performing additional testing when discrepancies were found.

All of this, along with other improvements and our normal duties, has led to the fleet performing better than it ever has, and as evidence of this, I point to the just-completed STS-130 mission. *Endeavour* returned home from a challenging and complex mission, having performed magnificently and with zero major problems and virtually nothing to be evaluated prior to committing to the next mission. That said, we stand ready to address any problems that may surface and we remain ever vigilant looking for and trying to anticipate that next problem before it even occurs. This is the product of a highly skilled team and a vehicle with history – a history whose final chapter should not be written until we are certain there will be a story on the next page so that full utilization of ISS to 2020, and possibly beyond, can truly be realized.

When I and others point out the vast improvements in Space Shuttle safety and reliability, we are often labeled as “shuttle-huggers” trying desperately to maintain the status quo for our “government-funded jobs program”. We have heard it all before and I assure you that anyone who truly knows me would not use the words “status quo” to characterize me. The reality of the situation, in my opinion, is that we need a better and smoother transition that recognizes the new robustness of Space Shuttle performance and one that does not instantly and all at once swing the pendulum to the opposite extreme. We need a transition that not only plans for the future with a detailed program including feasible and realistic timetables for beyond-Earth-orbit exploration but also supports our immediate and critical mission: full utilization of the International Space Station. We need a transition that takes advantage of the capabilities of multiple commercial providers, in combination with any potential follow-on NASA vehicle, to ensure full utilization of the ISS. At present, this full utilization can only be accomplished with an extension of the Space Shuttle Program. Once these commercial providers or other vehicles have met the appropriate performance milestones that prove their capability, then that is and should be the trigger for Shuttle retirement. However, if ISS is allowed to degrade or not realize its full potential, the business case for these commercial providers could possibly degrade with it.

Extension of the Shuttle Program also opens up the possibility of a Shuttle-Derived Heavy Launch Vehicle (HLV). Some form of an HLV has generally been agreed to be needed, along with several other potential technologies, to enable exploration beyond low-Earth orbit. It has been suggested that we spend some of the proposed R&D money on technologies to be used for another HLV that may come online twenty or so years from now. However, we have an HLV today and a recombination of the Space Shuttle elements into a new in-line configuration could yield that capability in just a few years and take advantage of the natural synergies between Shuttle, HLV and their shared infrastructures, potentially driving down the costs of both.

Finally, we have heard a lot about education and inspiring the next generation – an extremely worthy goal no doubt and one I have been fortunate enough to play a part in from time to time and will do so again as my two little girls grow. It is said that the proposed new direction will do just that. However, I believe there are some concerns that need to be considered. In my opinion and experience all young people will not get excited about only research and development that only offers the possibility of going somewhere, somehow, with something like what may be in a test stand, someday in the future. I believe the best way to inspire the next generation is for them to see real plans in action, with real hardware doing real missions and knowing there is more to come and that they too can be part of it.

I use myself as an example. I was born after the Apollo moon missions and have never seen anyone leave the confines of Earth orbit. My generation inherited the Space Shuttle Program and I am lucky enough to be a part of it and to be involved in the construction of the International Space Station. However, the Space Station Program was first announced when I was ten years old. Today, at thirty six years old, we are just finishing up construction. My fear is that kids who would otherwise do well in this field are ultimately discouraged from entering it by multi-generational programs and the constant threat of policy changes.

We are already seeing the signs of that pattern repeating, where students in college studying engineering and technology today, could be older than I am now when the theoretical HLV under the

current proposal finally lifts off the ground for the first time. If we as a Nation are serious about spaceflight, then that is something we together must absolutely change. As I said earlier, I never saw man walk on the moon and that was something already relegated to history books by the time I was born. My real concern with the current proposal is that my girls will grow up in a country where they too have to look to the history books to see what this Nation used to be capable of achieving.

Thank you again, Mr. Chairman, and I am happy to respond to any questions from you or Members of the Subcommittee.