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**Statement of**
**John C. Frost**
**Member**
**National Aeronautics and Space Administration's**
**Aerospace Safety Advisory Panel**

**Before the**

**Subcommittee on Commerce,**
**Justice, Science, and Related Agencies**
**Committee on Appropriations**
**United States Senate**

Good morning Madam Chair, Ranking Member Shelby and other Members of the Subcommittee. Thank you for the opportunity to discuss the Aerospace Safety Advisory Panel's observations as they relate to the scope of your subcommittee. Because of a schedule conflict, our Chairman, Adm. Joseph Dyer could not be with us today but sends his best regards.

Let me start with a brief background of the Aerospace Safety Advisory Panel, or ASAP. The ASAP was established by Congress in 1968 to provide independent safety assessment and recommendations to NASA after the tragic Apollo 1 fire that took the lives of three astronauts. By law, we now serve two functions: 1) Provide independent safety advice to the NASA Administrator; and, 2) Advise Congress on NASA's overall safety challenges and performance. We visit different NASA Centers and activities once a quarter where we probe and question all the elements of the Agency's safety program, both for spaceflight and for terrestrial operations. We issue quarterly recommendations to the NASA Administrator and publish an annual report to Congress, summarizing our findings and recommendations. I will attempt to very briefly summarize for you our key findings and observations from the last year as they relate to your pending budget considerations.

First, let me express a heartfelt commendation that I believe is shared by every member of the ASAP. That commendation is for the quality of leadership and commitment to safety that has been long demonstrated by the new administrator Gen. Charlie Bolden. When it comes to the safety of our astronauts, I can think of no better hands for the agency to be in.

Now on to the key findings of our 2009 report that relate most directly to the issues that your subcommittee is dealing with at this time.

1) SPACE SHUTTLE. As you know, the life of the Space Shuttle is nearing its end. Because of the Herculean efforts of the managers and workers at NASA and its contractors, this complex flying machine has performed admirably during its 29 year life. Sadly, the very power and complexity that enable it to accomplish the wide variety of missions for which it was designed, have also contributed to two tragic accidents and the loss of 14 lives. The ASAP has closely monitored Shuttle operations since its inception. In view of the inherent hazards of the basic Shuttle multifunction design, the age of some critical subsystems, and the need to recertify the fleet as identified by the Columbia Accident Investigation Board, the Panel believes that the life of the Space Shuttle should not be extended significantly beyond completion of its current manifest. To do otherwise would require funding the substantial efforts required to ensure that life extension vulnerabilities are identified and corrected in a timely manner. Additionally, the inherent risk of continuing to operate this system would have to be accepted by the Nation's leaders.

2) FOLLOW-ON TO SHUTTLE. The Panel has intensely monitored the progress of the Space Shuttle replacement program since its beginnings. We found that the Ares 1 vehicle has been optimized for crew safety since its inception. Because of fundamental vehicle architecture choices made at its concept stage, the widespread use of heritage-based subsystems with proven track records and the intense involvement of experienced NASA space design professionals serving as the systems integrators, the ASAP believes the Ares 1/Orion offer a high degree of inherent safety. In fact, they are being designed to provide a ten-fold improvement over the safety of existing vehicles. In our opinion, space vehicle safety simply cannot be taken as "a given" as some would like to be the case. As we stated in our 2009 report to Congress, "To abandon Ares 1 as a baseline vehicle for an

alternative without demonstrated capability nor proven superiority, or even equivalence, is unwise and probably not cost-effective." We are aware of course that several commercial entities hope to provide safe, low-cost access to Low Earth Orbit in the not too distant future. We have not evaluated their proposals and cannot comment on their eventual safety; however we must point out that NASA has not yet established any safety requirements for these commercial providers. Even more importantly, the Agency has not yet established a process that can provide the right mix of insight and oversight to ensure the safety of NASA astronauts traveling in these vehicles. The safety of potential commercial providers cannot be evaluated until key safety requirements, such as the acceptable risk level for Loss Of Crew, are established and proposed designs are evaluated against them. While progress is now being made on establishing these requirements and processes, it is too early to tell if the commercial options that are contemplated can eventually be deemed safe enough for our astronauts. Our bottom line recommendation is to not abandon the well-established progress already made on the Program Of Record in favor of an alternative, until such time that it is determined that the alternative provides equal or better safety for our astronauts.

3) WORKFORCE TRANSITION. The “magic bullet” that has allowed NASA to achieve the incredible feats for which they are known around the world is its highly dedicated and motivated workforce. At every Center that we visit, we see this dedication and excitement in every face. Maintaining this talent, momentum, and enthusiasm during a time of transition from a Shuttle based Manned Spaceflight Program to an alternative is the key to the future of the Agency. In the past four years, NASA has expended significant effort developing detailed transition plans that map skills, talent, and necessary funding streams from a "Shuttle Centric" organization to one that is Ares/Orion based. The Panel has found this Transition Plan paying off already in the form of workers’ excitement and satisfaction over their role in the coming exploration of our solar system. If a major change in the future roles and missions of these NASA workers is the path chosen, it is imperative that a new transition plan be developed quickly, clearly showing these workers their place in the new vision. The turmoil created by uncertainty can result in loss of key personnel which presents obvious safety concerns.

4) INFRASTRUCTURE. As the panel visits the various Centers, we carefully watch for facility conditions that could contribute to mishaps or hurt mission performance. I must report to you that we are seeing examples of such conditions which concern us. While, to a person, the employees "can-do" attitudes help them cope with the impediments of these conditions, it is inevitable that worker performance and safety could be impacted. Adequate funding for NASA facilities and infrastructure must be considered on even ground with that of the more visible missions that actually come out of these facilities.

In conclusion, Madam Chair, in the view of the ASAP, NASA stands at a critical juncture. Choices made today about the future of Human Spaceflight will impact the safety of astronauts for a generation to come. Most importantly, resources and schedules provided to NASA must be consistent with whatever mission they are assigned. Asking NASA to attempt too much, too fast, with too little can only lead to danger and disappointment. I will be happy to answer any questions that you or the other Members of the Subcommittee may have about our observations.