

Statement of Vice Admiral Joseph W. Dyer, USN (Retired)
Chair National Aeronautics and Space Administration's Aerospace Safety Advisory Panel
Before the Subcommittee on Space,
Committee on Science, Space, and Technology
U.S. House of Representatives

Chairman Palazzo, Ranking Member Edwards and Members of the Subcommittee: Thank you for the opportunity to discuss the Aerospace Safety Advisory Panel's 2014 Activities and Annual Report. I've limited the scope of my testimony to focus primarily on the Commercial Crew Program.

The ASAP salutes NASA on the many accomplishments achieved during 2014. Among many others, these include safe International Space Station (ISS) operations, growing traction on the Exploration Systems Development (ESD) program, success in supporting ISS logistics via commercial cargo, and positive strides in infrastructure management. The leadership and program management of the ISS is highlighted for its openness, transparency, and candor. The ISS culture is a space flight exemplar.

In our 2014 Report to the NASA Administrator and the Congress, we noted that NASA is experienced and accomplished in procuring space systems by "making," "managing," and "buying." An example of "making" is NASA custom-produced satellites; an example of "managing" is launch vehicles, whereby a NASA program office manages fulfillment of a "performance spec," often designed and generally produced by a contractor; an example of "buying" is commercial satellite launch services, whereby NASA procures a service where the marketplace has established the bona fides of value, safety, and reliability.

The Commercial Crew Program (CCP) falls within a chasm between the deep insight of "managing" and that of "buying" a product proven by broad market acceptance. With the CCP, NASA is operating at relative arm's length while concurrently fostering the development of a commercial market. The distinctions between the three approaches often blur, but one usually dominates. NASA, within a constrained budget, is attempting to approach the commercial crew transportation requirement as "buying a service," yet the maturity of the product may be more suitable to a "managed" development. NASA is making a laudable effort to embrace this new business model but is caught somewhere in the transition between managing and buying.

The Panel strongly believes open communication and transparency are essential to ensuring the safety of the program as we go forward with such a construct. This raises the questions regarding safety. Regrettably, the Panel is unable to offer any informed opinion regarding the adequacy of the certification process or the sufficiency of safety in the Commercial Crew Program (CCP) due to constraints placed on access to needed information.

Within the CCP candid, timely, and transparent communication of risk has been insufficient. This lack of transparency has been a concern for a number of years and, despite numerous discussions with the Director of Commercial Spaceflight Development (DCSD) and with senior leadership at NASA Headquarters, this less-than-candid and -transparent communication with the ASAP regarding the CCP has persisted. Over the last several years, the DCSD has responded to ASAP's requests for information related to the plans on how commercial programs would be certified or how confidence would be gained on the safety of operations with a seamless set of constraints as to why the information could not be shared. These have ranged, in order of occurrence, from:

1. "We're still defining the acquisition approach" to
2. "That information is pre-decisional" to
3. "The investigation is still being conducted" to
4. "That's source selection sensitive information" to
5. "A protest has been filed."

While these statements are all true, these conditions should not have been absolute barriers to sharing information related to certification and safety. The responses by the DCSD have generally been a compilation of all the reasons cooperation was not possible rather than figuring out how to make things work. The ASAP members are, after all, special government employees.

The Panel is concerned that this lack of candor is not limited to interactions with the ASAP and may extend to other internal and external stakeholders. This issue is reminiscent of the problems that were explicitly identified by both the Rogers Commission and the Columbia Accident Investigation Board (CAIB) regarding causes of the Space Shuttle Challenger and Columbia mishaps respectively.

I would add, NASA knows how to work in an open and transparent way. Within NASA, there are outstanding examples of programs that have inculcated a culture of clear and candid communications. Their approach to accountability, good

systems engineering, and respect, both up and down the organization chart, would find strong favor with the authors of the Columbia Accident Investigation Board Report. As noted, ISS is a great example.

Going forward into 2015, the NASA Administrator has committed to making the changes necessary to resolve this situation and to ensuring these barriers are removed. Since the publication of our Annual Report, we are beginning to see improvements.

In the 2014 Annual Report to the NASA Administrator and to the Congress, we again highlighted the mismatch between the breadth of the Agency's undertakings and the funding available to execute them. The resources necessary to safely and efficiently accomplish the full scope of scientific discovery, aeronautics research, commercial space transportation, and further extending the Nation's reach into the solar system are insufficient. Especially, I highlight the importance of sufficiently funding the CCP to sustain competition. This is especially true as NASA has started developing the equipment that will carry Americans to Mars concurrently with extending the life of the International Space Station.

NASA's budget is insufficient to deliver all current undertakings with acceptable programmatic risk. History clearly shows programmatic risk precipitates tradeoffs that are not in support of good safety practice. The Panel highlights three possible methods to relieve this situation:

1. Prioritize and set aside programs, activities, and infrastructure of lesser import (i.e., do fewer things better);
2. Improve the utility of NASA's investment by completing programs of record versus the restarts that too often follow administration change (i.e., finish what is started); and
3. Form a lasting consensus among the Administration, the Congress, and NASA on a genuine, long-term mission and vision and provide the funding required to deliver it.

The Panel notes the many NASA human space flight programs that have been initiated in the last 20 years but not carried to completion. The ASAP appeals for "constancy of purpose" and observes this objective is both important and challenging when there is a change of leadership in either the Congress or the White House. Another threat to constancy of purpose is the reaction to inevitable failures along the way. Rather than canceling a program or coming to a prolonged standstill after a failure, an appropriate reaction—given constancy of purpose, a

clear and well-articulated goal, transparently communicated risks and values, and mitigated or accepted risks—is to learn from the failure, fix any problem expeditiously and responsibly, and continue. The ASAP believes that this is the approach being taken with respect to the recent Cargo Resupply Services (CRS) launch failure and supports it.

The Panel notes NASA is doing a better job of communicating the risk inherent in space flight. The way the Agency communicated the danger Curiosity faced in landing on Mars is a good role model.

In closing, the Panel commends NASA's continued use of unfunded Space Act Agreements to stay engaged with the evolving, privately-funded commercial space companies including Sierra Nevada Corporation, Blue Origin, and Virgin Galactic, among others.

You may access the ASAP's 2014 report via:

http://oiir.hq.nasa.gov/asap/documents/2014_ASAP_Annual_Report.pdf