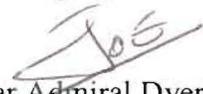


National Aeronautics and
Space Administration
Office of the Administrator
Washington, DC 20546-0001



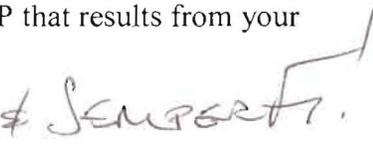
May 3, 2012

Vice Admiral Joseph W. Dyer, USN (Ret.)
Chair
Aerospace Safety Advisory Panel
National Aeronautics and Space Administration
Washington, DC 20546


Dear Admiral Dyer:

Enclosed is NASA's response to a recommendation from the 2012 First Quarterly Meeting of the Aerospace Safety Advisory Panel (ASAP). Please do not hesitate to contact me if the ASAP would like further background on the information provided in the enclosure.

I look forward to receiving continued advice from the ASAP that results from your important fact-finding and quarterly meetings.

Sincerely, 



Charles F. Bolden, Jr.
Administrator

Enclosure
2012-01-04 Commercial Crew Safety Certification Process

Tracking Number 2012-01-04
Commercial Crew Safety Certification Process

Finding:

Certification requirements and standards have been addressed at a high level, but not down to levels 3 and 4. The next phase of the Commercial Crew Program--Phase 1, Integrated Design--will not be as constrained under Space Act Agreements (SAAs) as under Federal Acquisition Regulation (FAR)-based contracts. Therefore, it is even more important to understand what the certification requirements are going to be and how such certification will be accomplished so that the various partners have the maximum opportunity to be properly prepared to address and satisfy them.

Recommendation:

NASA should define the safety certification process and standards, down to levels 3 and 4, as quickly as possible. NASA should provide the ASAP forthwith the schedule by which these requirements will be developed and promulgated.

Rationale:

Without these requirements well-defined and understood, the uncertainty goes up and the risk goes up. NASA could potentially arrive at a place where the various commercial ventures either don't satisfy the requirements, or NASA is under pressure to accept more risk than intended.

NASA Response:

NASA concurs with the intent of the recommendation. NASA's approach to the safety certification process is described below. We are unable to provide the requested schedule, however, information regarding upcoming milestones is provided below.

It should be noted that both the previous acquisition approach and the current one ultimately conclude with NASA certifying a commercial Crew Transportation System (CTS) under a FAR based contract prior to a NASA crewed flight. In order to ensure safety is not compromised, the FAR-based contract will be used to evaluate the results of the development effort and undergo certification prior to flying NASA and NASA-sponsored crews on these systems. Thus, there will be no reduction in the safety expectations or requirements as a result of this change in acquisition strategy.

The ASAP recommendation referred to the "certification process" and the "level 3, 4 certification standards." Regarding the certification process, NASA has initiated the development of NASA's plan for certifying a commercial participant's CTS. NASA started with the requirements defined in the 1100 series documentation, and is defining the expected types of data that would be provided by a commercial participant to NASA under contract, the process NASA will use to review the data, and how NASA will document its assessments. This information will guide the Commercial Crew Program through the approval and implementation of the commercial provider's Certification Plan and will culminate in a program recommendation for CTS certification. This internal NASA process will be documented in CCT-PLN-2000, CTS Certification Plan, and is scheduled for internal review in the summer of 2012.

Enclosure

Regarding the level 3, 4 certification requirements and standards, those will be managed by the commercial providers. NASA has already identified in our requirements documents (1100 series and SSP 50808, International Space Station (ISS) to Commercial Orbital Transportation Services Interface Requirements Document) the fundamental elements needed to develop a Certification Plan for use as a reference to any provider considering NASA as a potential future customer. These documents were baselined and have been accessible to the commercial industry since December 2011. Due to competition and the understanding that a NASA certification will eventually be required, providers should be motivated to decompose the NASA level 2 requirements (established under CCT-REQ-1130, The ISS Crew Transportation Certification and Services Requirements Document and SSP 50808) into the provider's corresponding level 3, 4 requirements and associated verifications as part of their Certification Plan.

However, since the providers will own and operate the CTS design, the providers will define the appropriate requirement levels that they will need to manage for their unique architecture. This is a fundamental premise of the program whereby NASA is following a non-traditional method to develop a low-Earth orbit human space transportation system by allowing private companies more design ownership of their space systems.

While the providers will manage the application of the level 3, 4 certification requirements and standards for their CTS, NASA will be intimately involved in that process during the next SAA phase and the subsequent certification phase.

During the next SAA phase, i.e., the Commercial Crew integrated Capability (CCiCap) phase, NASA will have significant insight into the certification plans and processes of the commercial providers. The CCiCap Announcement for Proposals contains the following goals specifically requesting that participants address their certification and risk reduction plans:

- Demonstrate a process to analyze, quantify, and understand the risks associated with the design.
- Establish the criteria and plans for the participant's certification of the system for the orbital crewed demonstration flight, which considers potential customer standards (e.g., NASA's 1100 series, SSP 50808, and industry equivalents).
- Conduct significant risk reduction activities (for example, uncrewed test flight, pad abort test, or drop test).

The commercial providers will be proposing milestones that support these goals and those milestones will be incorporated into the CCiCAP SAAs. NASA will have in-depth insight into certification-related milestones through the program's Partner Integration Teams (PITs). The PITs will gain an understanding of providers' certification plans and processes through watchful observation, documentation review, meeting attendance, tests, and milestone compliance evaluations. Through this process, NASA will understand how the providers are applying and managing their level 3, 4 certification requirements and standards.

For the certification phase, NASA has formed an Acquisition Planning Team (APT) to develop viable long-term acquisition options that would enable NASA to evaluate certification plans and activities, per NASA's requirements and certification process (independently from CCiCap) and

transition to a contract establishing NASA's certification oversight authority. Under its contractual authority, NASA will review and coordinate with the commercial participants to reach an acceptable Certification Plan for the participant's unique CTS. To be considered acceptable, it will need to include industry's lower level requirements and associated verifications as evidence of meeting the NASA level 2 requirements. NASA approval will be directly tied to NASA's level 2 requirements and associated verifications. The APT is scheduled to complete their process by the late spring/early summer of 2012.