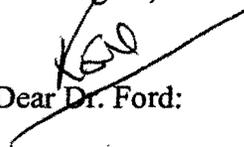


National Aeronautics and Space Administration
Office of the Administrator
Washington, DC 20546-0001



February 23, 2011

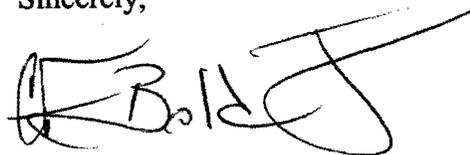
Dr. Kenneth Ford
Chairman
NASA Advisory Council
Washington, DC 20546


Dear Dr. Ford:

Enclosed are three NASA responses to recommendations from the NASA Advisory Council meeting held October 6-7, 2010, in Palmdale, CA. Please do not hesitate to contact me if the Council would like further background on this response. I appreciate the Council's thoughtful consideration leading to this recommendation and welcome its continued observations and advice concerning NASA's plans and programs.

I look forward to working closely with you and the members of the Council in the future.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Bolden, Jr." with a stylized flourish at the end.

Charles F. Bolden, Jr.
Administrator

Enclosures:

1. 2010-04-07 (EC-03) Developing Operability Incentives When Acquiring Commercial Crew Capabilities
2. 2010-04-12 (SOC-01) Verifying and Certifying Commercial Crew Spacecraft
3. 2010-04-13 (SOC-02) Sharing NASA's "Know-How" with Commercial Developers

NAC Tracking Number 2010-04-07 (EC-03)
Developing Operability Incentives When Acquiring Commercial Crew Capabilities

NASA Advisory Council Recommendation:

NASA should develop operability incentives for the acquisition of commercial crew capabilities. These incentives should drive commercial partner design to include features resulting in recurring cost of operations low enough to attract other customers in addition to NASA.

NASA Response:

NASA concurs. NASA's commercial crew program strategy includes several features that incentivize cost-effective recurring operations for all customers, including the Government. First, NASA will impose only the minimum set of requirements on commercial partners to ensure safety while enabling innovative and cost-effective design solutions. Second, NASA will require the commercial partners to share in the cost of the design and development of commercial crew capabilities, which will encourage the commercial partners to minimize costs and acquire other customers in order to get a return on its investment. Third, NASA will strive for competition among multiple commercial partners throughout the design, development, test, evaluation, and certification phase and, ideally, through the award of any service to ISS, which is the predominant incentive to minimize operations costs. Note: The ability to fund multiple commercial partners will be based on available budget.

Tracking Number 2010-04-12 (SOC-01)
Verifying and Certifying Commercial Crew Spacecraft

NASA Advisory Council Recommendation:

NASA should expedite development of a strategy, plan and a team for defining and obtaining objective data which would indicate that a commercial vehicle is adequately verified, certified and tested to meet requirements. This strategy and plan should be part of the solicitation package. The plan should identify the analytical and test data, including flight test required, and NASA's involvement in the development activity to enable informed participation in reviews to ascertain that the requirements have been met. The NAC also suggests that part of the strategy should be a small technical team(s) with representatives from all critical disciplines, including flight crew personnel, to following the development of the vehicle and operations development. These teams should be limited in size and operate under guidelines defined in "the plan." These team(s) should cover all the bases, and should be staffed with specific named participants.

NASA Response:

NASA concurs that a strategy, plan and a team for defining and obtaining objective data which would indicate that a commercial vehicle is adequately verified, certified, and tested to meet requirements should be developed and expedited. NASA has identified a document architecture that would allow a commercial partner (CP) to provide innovative design solutions to meet NASA's needs. The Agency recognizes that in order to allow commercial innovation, NASA will need to identify firm requirements while giving the CPs the flexibility to leverage best commercial practices. NASA is parsing the document architecture into several documents to clearly communicate interfaces, requirements, standards, and processes for CPs. The framework and implementation process provided through this documentation architecture will allow NASA and CPs to ensure that all interfaces, requirements, standards, and processes are met by CPs to safely transport NASA/NASA-sponsored crewmembers. Furthermore, NASA will ensure that commercial missions are held to the same safety standards as Government missions. NASA refers to the document architecture as the "1100-series" documents. Document CCT-PLN-1100 establishes the planned roles and interfaces between the Agency and the CPs and describes the necessary elements for achieving certification to transport NASA/NASA-sponsored crewmembers. It should be noted that NASA intends to enable a diverse portfolio of commercial service capabilities. Thus, various launch systems with various levels of design and flight heritage are envisioned to potentially fill NASA's needs. NASA has adopted the approach in CCT-PLN-1100 to allow CPs to propose Certification Plans that address design, build, and demonstration tests and flights to ensure that a commercial vehicle could potentially be tested, verified, and certified. CCT-DRM-1110 contains sample Design Reference Missions (DRMs) that are top-level mission scenarios applicable to potential NASA missions to low-Earth orbit (LEO) destinations. CCT-REQ 1130 provides the CPs with the NASA-mandatory ISS crew transportation certification and service requirements, while CCT-STD-1140 describes the technical, safety, and crew health and medical processes and specifications as well as the criteria which will be used by NASA to evaluate the acceptability of the CPs' proposed design processes

and specifications. CCT-STD-1150 includes the standards intended to establish minimum criteria and practices that will be used by NASA to evaluate Human Space Flight operations. The entire 1100-series documents will be made available for industry review and comment to ensure that industry has a chance to provide comments to NASA's documents and approach. Once the documents are baselined, NASA will make these documents available for industry to use during proposal development in support of any NASA commercial crew competition activities. NASA plans to use insight and oversight of the CPs to ensure its access to analytical and test data, including flight tests. NASA's involvement through insight and oversight in the development activity will enable informed participation in reviews and throughout the life cycle to ensure that the requirements have been met to achieve crew transportation system certification for NASA missions. In order to ascertain this, NASA will identify the skill mix/disciplines, including flight crew personnel that would be needed to follow the design, development, and verification of an integrated end-to-end system and operations. Since NASA is expecting multiple CPs, the Agency will need to limit the insight teams to small technical teams that will perform the necessary insight with oversight performed by the NASA program. NASA plans to have a subset of the technical team reside with the CPs to increase communications and awareness between NASA and the CPs. This, in turn, will require that the Agency specify NASA team members to ensure consistency with the CPs and, internally, within NASA. NASA plans to bring additional technical expertise within the Agency, as required, for complex technical-issue resolution. This approach will minimize technical risk to the CP and NASA while leveraging the large human spaceflight technical expertise within NASA, whenever needed.

NAC Tracking Number 2010-04-13 (SOC-02)
Sharing NASA's "Know-How" with Commercial Developers

NASA Advisory Council Recommendation:

The NAC recommends that the impressive NASA capabilities and background available at the Human Spaceflight Centers be offered to the bidders of the commercial crew vehicle. A mechanism can be set up to share this know-how in the most efficient and useful way, to expedite development and safe operation of commercial spacecraft.

NASA Response:

NASA concurs. In accordance with existing statutes and an Agency-level policy, NASA makes available to industry its technologies and resources, including skills, knowledge, lessons learned, facilities, property, and equipment. Each NASA Field Center has established a process to enable commercial partners (CPs) to request and obtain NASA's available assets. These processes were advertised to potential CPs in the announcement/solicitation for Commercial Crew Development Round 2. NASA will ensure that these processes are communicated to industry in future announcements/solicitations.