Statement prepared by NASA November 1, 2016:

Spacecraft and launch vehicles designed for the Commercial Crew Program must meet NASA's safety and technical requirements before the agency will certify them to fly crew. The agency has a rigorous review process, which the program is working through with each commercial crew partner. Consistent with that review process, NASA is continuing its evaluation of the SpaceX concept for fueling the Falcon 9 for commercial crew launches. The results of the company's Sept. 1 mishap investigation will be incorporated into NASA's evaluation.

Independent advisory groups provide input on commercial crew safety considerations, among which the Aerospace Safety Advisory Panel is the primary independent adviser for commercial crew activity. Other groups, such as the ISS Advisory Committee, also seek information, and we treat all inquiries seriously. The ISS Advisory committee focuses on the International Space Station and international systems.

LT. GEN. THOMAS P. STAFFORD, USAF (Ret.)
Chairman, NASA ISS Advisory Committee
NASA Headquarters
Washington, DC 20546

December 9, 2015

Mr. William Gerstenmaier
Associate Administrator for Human Exploration and Operations
National Aeronautics and Space Administration
300 E Street SW
Washington, D.C. 20546

Dear Mr. Gerstenmaier,

We sincerely appreciated the briefing on the Commercial Crew Program from Kathy Lueders and Bill Jordan to our U.S. committee members. Thank you for making the briefing available to the committee. As is normal when the committee begins reviewing a topic, the briefing raised about as many questions as it answered. I will not list all the topics we will continue to follow, but there is one major issue that I believe deserves your careful attention.

There is a unanimous, and strong, feeling by the committee that scheduling the crew to be on board the Dragon spacecraft prior to loading oxidizer into the rocket is contrary to booster safety criteria that has been in place for over 50 years, both in this country and internationally. Historically, neither the crew nor any other personnel have ever been allowed in or near the booster during fueling. Only after the booster is fully fueled and stabilized are the few essential people allowed near it.

Furthermore, in addition to the personnel risk, there is the risk of operating the engines outside their design input conditions. As an experienced "Prop" guy you know the problem here as well as anyone. Pump-fed chemical engines require a sufficient and consistent input pressure to reduce the likelihood of cavitation or unsteady flow operations. We are concerned that there may be insufficient precooling of the tank and plumbing with the current planned oxidizer fill scenario, and without recirculation there may be stratification of oxidizer temperature that will cause a variation in the input conditions to the oxidizer pump.

In summary, we are deeply concerned about introducing the practice of fueling with the crew onboard, and about the lack of even a recirculation pump for oxidizer conditioning on Falcon 9.

Sincerely,

Thomas P. Stafford
Lt. Gen., USAF (Ret.)
Chairman
NASA International Space Station Advisory Committee