

Written Testimony of
Lieutenant General Thomas P. Stafford, USAF (ret.)
Chairman, International Space Station Advisory Committee

Before the
Subcommittee on Space and Aeronautics
Committee on Science, Space and Technology
United States House of Representatives

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Thank you, Chairman Palazzo, Ranking Member Costello, and Full Committee Chairman Hall for that warm introduction, and to the Committee for the opportunity to once again express my personal views and concerns at this hearing to review the impacts of the recent Soyuz launch vehicle failure on the safe operation and utilization of the International Space Station (ISS). I will attempt to answer the questions provided in your letter of invitation from the standpoint of my position as the advisory committee chairman and former astronaut. As you all know, I have had the unique experience of working with the Russians during the era of the Soviet Union as a member of the Apollo-Soyuz Test Program. As an American astronaut, I joined with our Russian colleagues and was afforded an opportunity to view their space program up close alongside their best engineers and technicians. As a result of that successful joint program, NASA and ROSCOSMOS were able to join again to operate together in space with the Shuttle-MIR program culminating in our successful partnership on ISS. Throughout that long partnership, I continued to observe and assess the Russian space program and am delighted to share my thoughts.

If the proposed launch schedules of the Soyuz U and Soyuz FG launch vehicles are realized, the long term affect on the ISS operation will be relatively minor. The last few Space Shuttle flights, and especially STS-135 were able to deliver consumables, spares, utilization hardware and samples to provide margin through CY 2012. The bigger concern at this time is the ability to return to a full complement of 6 crewpersons onboard the ISS as soon as possible to maximize utilization for the United States. The Soyuz FG booster used to launch the Soyuz TMA crew vehicles is a variant of the Soyuz U which experienced the failure, and its launch resumption will be dependent on the successful Soyuz U launch of Progress 45P on October 30th. If that launch is successful – and I have every confidence it will be - the next crew will be launched to the ISS on or about the 13th of November and the ISS will return to 6 person crew on 26 December, 2011.

With regard to the adequacy of the Russian return to flight effort, I have not received briefings on the activity or results of the Russian Investigation Commission regarding the recent (24 August 2011) failure of the Soyuz U carrying the Progress M-13M/45P logistics vehicle. However, Mr. Gerstenmaier recently received these briefings from the Russian experts in Moscow and I feel the best use of our time today would be for me to yield the response of this question to him. I would like to comment on the reliability history of the RD-0110 engines used on the Soyuz launch vehicles. Out of a block of 6 engines, five are flown and one is test run for the full nominal 3rd stage burn duration of 240 seconds, and then inspected. Prior to this first failure, there have been a total of 1,800 RD-0110 engines that have flown, and an additional 360 that have undergone the 240 second test run. This equates to a total of 2,160 RD-0110 engines that have been successfully operated. Although not directly involved in this investigation, I would like to share a perspective. In 1999 I was asked by the Administrators of NASA and Roscosmos to engage in a full understanding of the Proton launch failure investigation. Specifically, to have the Joint US-Russian Commission, which I co-chair, review the completed Russian investigation on the causes for the Proton booster rocket failures in 1999. This included the corrective action to be taken, and the safety, reliability, and quality assurance processes which were to be implemented for the Service Module (1R) launch vehicle. The trust and respect we had developed through our years of Joint Commission work resulted in very thorough, open and comprehensive briefings on the failure of the Russian Proton launch vehicle, in the investigation process, in the corrective actions taken to preclude a repeat of the failure, and of the extensive retesting of hardware to be used for flight.

With nearly 40 years of continuous and close working relationship with the Russians and their space program, I can attest to their thorough and complete approach to problem solving, and to their robust manufacturing and test program philosophy.

As for the impact to the US associated with the Soyuz launch vehicle not being able to return to flight, I would submit that today, there is no other vehicle in the world capable of delivering crews to the ISS other than the Soyuz TMA crew spacecraft.

In response to your question regarding contingency plans, the answer is yes, and in fact NASA is already exercising the first steps of the contingency plan. This plan was refined and formalized as a result of the Columbia accident investigation so the ISS program is well versed in dealing with this type of contingency. The ISS can be maintained in orbit without a crew for a time. The critical systems for ensuring safe operation of the ISS are all able to be controlled from the ground and designed with robust redundancy should an anomaly occur. It is my opinion that at this time adequate contingency plans are in place to ensure the continued safe operation of the ISS.

Mr. Chairman, in addition to the comments I have just given, I would like to submit for the record, as Attachment A, a summary of the Commercial Resupply Services

review recently conducted by the ISS Advisory Committee and the Aerospace Safety Advisory Panel. This review was Co-Chaired by Vice Admiral Dyer and myself at the request of the Associate Administrator for Space Flight Operations Mission Directorate, to review the status of the two Commercial Resupply Services (CRS) contractors for the ISS – Orbital Sciences Corporation (Orbital) and Space Exploration Technologies Corporation (SpaceX). The focus of this meeting was the status of the SpaceX “Dragon” and the Orbital “Cygnus” logistics vehicles.

Mr. Chairman, I thank you and the committee for giving me this opportunity, and thank you for all you do to advance American human space flight.