

National Aeronautics and Space Administration

NASA Advisory Council Task Force
on
International Space Station Operational Readiness

April 24, 2001
NASA Headquarters
Washington, DC

MEETING REPORT



Original signed by

Philip J. Cleary
Executive Secretary

Original signed by

Thomas P. Stafford
Chairman

**NASA ADVISORY COUNCIL TASK FORCE ON INTERNATIONAL SPACE
STATION OPERATIONAL READINESS**

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MEETING REPORT

Mr. Philip Cleary, Executive Secretary of the NASA Advisory Council (NAC) International Space Station Operational Readiness (IOR) Task Force, welcomed the participants to the open meeting. He explained that this meeting was being held to review the results of the fact-finding sessions conducted by the NAC IOR Task Force Working Group and the NAC IOR Task Force Working Group-Anfimov Advisory Expert Council (TF-AEC) Joint Commission. These meetings were conducted to review issues related to the flight of a non-professional astronaut/cosmonaut to the International Space Station (ISS) during the Soyuz 2 taxi mission. Task Force Chairman Lt. General Thomas P. Stafford, USAF (Ret.), presided and made the following remarks:

The purpose of today's open meeting is to review the results of two related, but separate, assessments that the Task Force Working Group performed. The first assessment required working with the Rosaviakosmos (Anfimov) Advisory Expert Council (AEC). The second assessment was a standalone Task Force Working Group assessment.

I will cover the Task Force's work with the Anfimov AEC first:

Background

NASA Administrator Daniel Goldin and Rosaviakosmos General Director Yuri Koptev tasked us and the Anfimov AEC to jointly assess the safety and operational issues of flying a non-professional astronaut/cosmonaut to the ISS during the upcoming Soyuz 2 taxi flight (scheduled for April 28, 2001).

The discussions of the following findings of the Joint Commission occurred at meetings in Russia on March 27 – 30, 2001. Representatives from the Joint Commission met with experts from Rosaviakosmos, RSC Energia, the Gagarin Cosmonaut Training Center (GCTC), and NASA.

Joint Commission Findings & Recommendations

The Joint Commission's work produced the following findings:

FINDING 1. Colonel Charles Precourt, Chief of the Astronaut Office, reported in his remarks to the Joint Commission that the ISS crew workload in April, May, and June is heavy, and flights to the ISS during this time must be reserved for professional astronauts/cosmonauts. Since the final timelines for the Soyuz 2 crew and the ISS Expedition crew were not yet available, the Joint Commission was not able to undertake an analysis of the possible affect on ISS operations during the taxi crew visit.

FINDING 2. The Russians have trained and certified Mr. Dennis Tito as ready to fly on the Soyuz 2 taxi flight based on their guarantee that he would only be interfacing with the Russian module hardware. This included:

- *Soyuz 2 Crew Commander Col. Musabaev speaking to the Joint Commission stating that Mr. Tito is fully certified to fly and that he, as crew commander, guarantees the safety of Mr. Tito's flight on the ISS.*
- *GCTC Chief of the Cosmonaut Office, Col. Korzun, stating that he is confident that the crew of Soyuz 2 will do their utmost to prevent Mr. Tito from interfering and will ensure his safety.*
- *And, the Russian medical commission stating that they have qualified Mr. Tito for flight.*

FINDING 3. Col. Precourt expressed his concerns on training sufficiency, operations planning, language capability (that is, Mr. Tito's Russian language ability, as well as mission terminology understanding), and safety onboard the ISS. His points included the fact that Mr. Tito has not trained with the U.S. trainers on the U.S. module and has not trained with the Expedition 2 crew.

FINDING 4. There is no agreed upon set of requirements against which to evaluate the flight readiness and safety of a non-professional crewmember to fly aboard the ISS.

FINDING 5. The only criteria available is the draft ISS Multilateral Crew Operations Panel's (MCOP) Crew Training and Certification Requirements document for expedition and visiting crewmembers which was developed by the Bilateral Crew Operations Panel (BCOP), but is yet to be approved by the ISS Multilateral Coordination Board (MCB).

This draft document includes criteria and a process for the assignment of Expedition and visiting astronauts/cosmonauts. At the time of the Joint Commission's review, the Russians stated that this did not apply to the upcoming taxi flight of Soyuz 2. This document proposes that the sponsoring partner will certify flight readiness of their visiting crewmembers and present such certification to the MCOP/MCB for approval.

The Joint Commission's work produced the following recommendations:

RECOMMENDATION 1. The ISS Partners should reach resolution on the draft MCOP/MCB Crew Requirements and adopt them as interim requirements to evaluate the suitability of ISS crewmembers.

RECOMMENDATION 2. The Russians, as required, should take action to address any shortfalls in Mr. Tito's training relative to the requirements of Recommendation 1.

RECOMMENDATION 3. The MCB process to deal with exceptions to the requirements imposed on the flight crews must be clarified and must be followed.

RECOMMENDATION 4. Any candidate crewmember completing the requirements of Recommendation 1, or a combination of the waiver process in Recommendation 3 and the requirements of Recommendation 1, shall be considered cleared for flight to the ISS.

In conclusion, the Joint Commission concurred with the Russian certification of Mr. Tito to safely fly onboard the Soyuz 2 vehicle and recognized his training to interface with the Russian module hardware, using a modified training template.

The Rosaviakosmos AEC stated its belief that Mr. Tito's training is sufficient to fly on the ISS and concurred with the conclusions drawn by GCTC that his training ensures safety onboard the ISS. However, the NASA Task Force stated that it did not feel that it had sufficient information to verify Mr. Tito's suitability to fly onboard the integrated ISS.

The Joint Commission recognizes the authority of the BCOP/MCOP and MCB concerning resolution of all ISS crew matters that affect all the partners. Further, the Joint Commission believes that rapid acceptance of the four recommendations just mentioned will help to clarify the crew certification process, help to mitigate safety concerns, and promote a mutual understanding of operations on the integrated ISS. Without such processes and standards, safety of operations cannot be verified.

That concluded the Joint Commission's assessment. I understand that the ISS Partners are currently working the Joint Commission's recommendations and using them to reach agreement on the issue of Mr. Tito's flight on the Soyuz 2 taxi flight.

Most recently, Mr. Goldin asked the Task Force to perform an independent assessment.

Background

Mr. Goldin asked the Task Force to thoroughly review the NASA contingency plan to ensure NASA and the ISS Expedition 2 crew take the appropriate actions to make Mr. Tito's visit to the International Space Station as safe as possible.

The discussions on the following findings of the Task Force occurred at meetings on April 12 and 13, 2001.

Task Force Findings and Recommendations

Based on its review, it is the assessment of the Task Force Working Group that the following risk-mitigating actions proposed by the JSC mission operations experts are imperative and sufficient to allow for Mr. Tito's flight in April:

RISK-MITIGATING ACTION 1. Increase onboard safety training for the Soyuz 2 taxi crew. This includes:

- *Doubling the briefing time for the Soyuz 2 taxi crew to ensure situational awareness of what to do in an emergency, such as:*
 - *escorting Mr. Tito into the U.S. Modules for exposure to caution and warning alarms.*
 - *briefing the crew on proper escape paths to their home vehicle.*
 - *identifying the location of emergency equipment and safety hazards throughout the ISS.*

RISK-MITIGATING ACTION 2. Modifying the Expedition 2 crew's timeline during the Soyuz 2 crew's visit to include only those activities required for:

- *health and safety of the crew and vehicle.*
- *nominal maintenance and operational activities to ensure the continued effective operation of the ISS.*
- *minimal ongoing payload support.*

PROPOSED ACTIVITIES REMOVED FROM THE TIMELINE INCLUDED:

- *International Space Station Remote Manipulator System Functional Checkout*
- *Treadmill Vibration Isolation System Slat Replacement*
- *Human Research Facility, Crew Health and Checkout System, and Express Rack 2 Activations*

THE OPTIONAL (AT CREW DISCRETION) TASK LIST INCLUDED:

- *Treadmill Vibration Isolation System Slat Replacement*
 - *Post STS-100 (ISS flight 6A) Stowage and Inventory Management System Update*
 - *Crew Health and Checkout System Rack Activation and Outfitting*
 - *Human Research Facility and Express Rack 2 Operations*
 - *Station Support Computer Network Reconfiguration*
- *The reduction in the crew's timeline activities should allow increased monitoring of Mr. Tito (both escorting and translating) by the Expedition 2 crew.*

In summary, it is the Task Force's opinion that the risk-mitigating actions I just mentioned are a reasonable set of controls that will help to ensure the safety of the crew and the ISS during the visit of the Soyuz 2 taxi crew. The Task Force fully endorses the Soyuz 2 taxi crew receiving twice the amount of time normally allotted for on orbit safety briefings. The approach of removing some activities originally planned during the visit of the Soyuz 2 taxi crew and identifying other tasks as optional is a rational one. These mitigating actions will minimize the operational timeline and allow the Expedition 2 Crew Commander to determine, based on his real-time assessments, what is safest for the crew to achieve.

While these actions may slow the progress toward ISS assembly complete, a long journey awaits us, and the safety of the crew and the ISS cannot be compromised. I see no issues regarding these mitigating actions that would preclude the safe and successful completion of the Soyuz 2 taxi mission to the ISS to replace the Soyuz crew return vehicle.

To further reduce risk, the Task Force Working Group believes that it should be made clear to Mr. Tito that his activities are limited to the Russian Modules, due to his lack of adequate training on the U.S. Modules, unless escorted by an Expedition 2 crewmember for the identification of emergency equipment and any required safety briefings. Also, it appears prudent that Mr. Tito be required to sleep in the Soyuz vehicle identified as his home vehicle in the event of an emergency during his sleep periods.

Rosaviakosmos must guarantee to all of the ISS Partners that it is fully liable for the flying of Mr. Tito, and that in the future, this type of unilateral decision will never happen again.

In addition to the above, I understand that Mr. Tito has been briefed on the ISS Crew Code of Conduct. The Task Force strongly recommends that Rosaviakosmos meet its commitments in accordance with the Crew Code of Code and confirm in writing that Mr. Tito has signed and will adhere to the Crew Code of Conduct.

I applaud the pro-active planning of NASA to safely manage this situation. I understand that the ISS Program Office will continue to refine the risk-mitigating plan for Mr. Tito's arrival. The Task Force will continue to monitor these plans and if we should develop any concerns prior to the Soyuz 2 taxi mission, we will contact NASA immediately.

Are there any questions or comments?

Open Discussion

Task Force member Milt Heflin stated that he would like for the Task Force to consider, as the above findings state, the possibility that the Operations and Program Offices may wish to add some optional tasks (e.g. additional check out of the Canadian Arm 2).

General Stafford concurred with the Program and Operations Offices' request to add additional optional tasks should the timeline permit it. Mr. Cleary added that requests for additional tasks would be brought to the Task Force for consideration.

Task Force member John Fabian asked for the professional makeup of the Soyuz 2 taxi flight, as he had heard that, of the three crew slated to fly, only one was a cosmonaut. Task Force Astronaut Representative, Michael Lopez-Alegria, stated that both of the Russian crewmembers have flown before and are indeed cosmonauts. General Stafford added that both Russians on the Soyuz 2 taxi flight have received safety systems indoctrination and training on the U.S. modules.

Task Force member Ronald Merrell stated that while he believes the Working Group has provided a splendid assessment, he remains concerned that the agreement language may be ambiguous enough to allow for a similar situation to happen in the future. General Stafford assured him that the MCB is instituting a process that must be agreed to by all International Partners and that there would be no more unilateral decisions that would allow non-professionals to fly without approval of the International Partners.

Task Force member Jim Adamson added that all of the International Partners knew that this issue would arise, but unfortunately it happened before a solid process was in place to deal with it. He added that the documents exist in draft form that will eventually prevent this type of situation.

General Stafford asked for additional questions, and received none. General Stafford thanked the meeting participants and expressed his appreciation to the members of the Working Group who performed these assessments.

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Task Force on International Space Station Operational Readiness
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Task Force Membership

Chairman

Lt. Gen. Thomas Stafford, USAF (Ret.)

Members

Col. James Adamson, U.S. Army (Ret.)
Mr. Percy Baynes
Mr. Benjamin Cosgrove
Mr. Joseph Cuzzupoli
Dr. Charles Daniel
Dr. John Fabian
Dr. Craig Fischer
Dr. Michael Greenfield
Mr. J. Milt Heflin
Dr. Daniel Heimerdinger
Maj. Gen. Ralph Jacobson, USAF (Ret.)
Cmdr. Michael Lopez-Alegria, USN
Dr. Ronald Merrell
Mr. David Mobley
Dr. Arnauld Nicogossian
Dr. Shawn Rahmani
Captain John Young, USN (Ret.)

Technical Advisors

Maj. Gen. Joe Engle, USAF (Ret.)
Mr. Mark Thiessen

Executive Secretary

Mr. Philip Cleary

Asst. Executive Secretary

Ms. Holly Stevens

Attachment B

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Meeting Attendees

Stafford Task Force Representatives

Chairman, Lt. Gen. Tom Stafford, USAF (Ret.), via teleconference
Colonel Jim Adamson, USA (Ret.), via teleconference
Mr. Percy Baynes – via teleconference
Mr. Joe Cuzzupoli – via teleconference
Dr. Chuck Daniel – via teleconference
Dr. John Fabian – via teleconference
Dr. Craig Fischer – via teleconference
Dr. Michael Greenfield
Mr. J. Milt Heflin - via teleconference
Dr. Daniel Heimerdinger – via teleconference
Cmdr. Michael Lopez-Alegria, USN – via teleconference
Dr. Ronald Merrell – via teleconference
Mr. David Mobley – via teleconference
Dr. Shawn Rahmani – via teleconference

Stafford Task Force Technical Advisors

Maj. Gen. Joe Engle, USAF (Ret.) – via teleconference
Mr. Mark Thiessen – via teleconference

Task Force Executive Secretary

Mr. Philip Cleary – via teleconference

Task Force Asst. Executive Secretary

Ms. Holly Stevens – via teleconference

Attachment B (cont.)

NASA Headquarters

Mike Green, Staff Director, NASA Advisory Council

Jennifer McCarter, Code IH

Dr. Richard Williams, Code AM

Others

Kimiko Aoki, NITK

Keith Cowing, NASA Watch

Leonard David, Space.com

Erin Heath, National Journal

Warren Leary, New York Times

Bill Murray

Ian Pryke, ESA

Paul Recer, Associated Press

Kathy Sawyer, Washington Post

Marc Schlather, ProSpace

Don Vergano, USAT

Larry Wheeler, Gannett News Service