

**National Aeronautics and Space Administration**

**NASA Advisory Council Task Force  
on  
International Space Station Operational Readiness**

**October 15, 2003  
NASA Headquarters  
Washington, DC**

**MEETING REPORT**



*Original signed by*

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Todd F. McIntyre  
Executive Secretary

*Original signed by*

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Thomas P. Stafford  
Chairman

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

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**TABLE OF CONTENTS**

Attachment A	Task Force Membership
Attachment B	Meeting Attendees

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

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## MEETING REPORT

Mr. Todd McIntyre, Executive Secretary of the NASA Advisory Council (NAC) International Space Station (ISS) Operational Readiness (IOR) Task Force, welcomed the participants and called roll.

Lt. General Thomas P. Stafford, USAF (Ret.) and Chairman of the NAC IOR Task Force, presided over the open meeting and gave the following remarks:

*Good afternoon and good morning to those on the west coast, and welcome. Thank you for participating in the open meeting of the NASA Advisory Council Task Force on International Space Station Operational Readiness. At the request of NASA Administrator Sean O'Keefe and Rosaviakosmos Director General Yuri Koptev, the Task Force Working Group held discussions in September with our counterpart Russian organization, the Anfimov Advisory Expert Council, and with other experts from Russia to assess the safety and operational readiness of the International Space Station's Expedition 8 mission. Specifically, we reviewed the safety and readiness of the ISS to receive a new crew, the health and flight readiness of the Expedition 8 crewmembers, and the readiness of the Russian flight control team in Mission Control Center–Moscow (MCC-M) to accomplish the mission. Additionally, due to Expedition 7's plan to return on the Soyuz TMA-2 vehicle, the Task Force Working Group and Russia's Advisory Expert Council, or the Joint Commission, reviewed preparations for safe landing and crew evacuation from the landing site.*

*Based on this review the Working Group found that:*

- *The Expedition 8 crew would be medically certified for flight before launch and would be fully trained to successfully perform their long-duration mission;*
- *The Russian flight control team in the Mission Control Center in Moscow is fully prepared to support the Expedition 8 mission;*
- *The International Space Station is safe and operationally ready to support the continued permanent presence of humans in space; and*
- *The Expedition 7 crew and combined ground support crews have been fully trained, and are prepared, with improved communication procedures and equipment, to support the descent and landing of the Soyuz TMA-2.*

*The findings of this report resulted from meetings in Moscow from September 22-26, 2003. These meetings included discussions with Expedition 6 and 8 crewmembers and with experts from Rocket Space Corporation (RSC)-Energia, the Gagarin Cosmonaut Training Center (GCTC), the Institute of Machine Building (TsNIIMash), TsUP (MCC-Moscow), the Institute for Bio-Medical Problems (IBMP), and the Search and Rescue Complex (PICK).*

*We received briefings on the following topics:*

- *Status of the ISS Environmental Control and Life Support System*
- *Countermeasures Equipment*
- *Carbon Dioxide Removal Assembly (CDRA)*
- *Metox Regenerative Canister*
- *Acoustic Conditions*
- *ISS-7 and ISS-8 Crew Medical Operations*
- *Soyuz TMA-2 and TMA-3 Vehicle Readiness*
- *Main Real-Time Operation Management Group readiness for ISS, Soyuz TMA-2, and Soyuz TMA-3 control*
- *Mission Control Center-Moscow Personnel Readiness*
- *ISS-7 Crew Readiness for Landing and ISS-8 Crew Readiness for Flight*
- *Training for ISS-8 EVAs*
- *Search and Rescue Complex Readiness*
- *Crew Rescue Training sessions in the Black Sea*
- *Expedition 6 and Expedition 8 Crew Comments*
- *Space Shuttle Return to Flight Activity Status*

*From these briefings, the Joint Commission concluded the following:*

#### *MEDICAL OPERATIONS AND CREW HEALTH*

*Medical representatives of the Joint Commission reviewed the Soyuz TMA-1 Technical Investigation Board's results of the transfer to the ballistic landing mode. Based on the analysis of this low-probability event, no evidence was found that would require a change in the plans for recovering the Expedition 7 crew. The Joint Commission was also made aware of significant degradation in the U.S. environmental monitoring and countermeasure equipment used to ensure crew health. The Joint Commission recommended that the ISS Program formulate a plan to resolve or mitigate these health risks prior to the Expedition 8 launch.*

#### *SOYUZ TMA-2 AND TMA-3 VEHICLE READINESS*

*The Soyuz TMA-2 currently on-orbit is of the same configuration as TMA-1. No hardware modification is possible for this vehicle. To prevent any delay in crew pick-up resulting from a downmode to ballistic re-entry, the following measures have been implemented: improving communication procedures between the crew and combined ground forces, equipping the crew with a satellite phone and Global Positioning System (GPS) receiver, and providing additional training for these new procedures and equipment. The Soyuz TMA-3 Landing System Control Unit has been modified, tested, and certified to avoid the problem experienced with Soyuz TMA-1. A satellite phone and GPS receiver will also be added to Soyuz TMA-3.*

#### *ISS 8 CREW READINESS FOR FLIGHT*

*The Joint Commission reviewed the flight crew and backup crew training and qualifications to perform the tasks on Expedition 8. This is a very experienced crew and they will have fulfilled all of the training requirements before launch. The Joint Commission finds the crew to be especially well prepared to interface with the current*

*crew, perform all nominal and contingency operations for Expedition 8, and perform all required Soyuz TMA operations.*

#### SEARCH AND RESCUE COMPLEX READINESS

*The training and preparation of the Search and Rescue forces were reviewed. In addition to the improved communications procedures and provision of satellite phones and GPS receivers, the deployment plan has been improved to afford better response time in case of a ballistic re-entry. The Joint Commission commends the Search and Rescue team on their planning and preparations and finds them to be completely prepared.*

#### SUMMARY:

*The Task Force appreciates the efforts of the subject matter experts in providing full and open discussions.*

*The Working Group and Joint Commission find that the Expedition 8 crew is highly trained and prepared for their October 18, 2003, launch. The Russian flight control team is fully prepared to support the mission, and the ISS hardware and software are operating satisfactorily to support the Expedition 8 crew. Finally, the Expedition 7 crew and combined ground support crews are fully trained and prepared to support the descent and landing of the Soyuz TMA-2.*

General Stafford continued by asking if there were any additional questions from the Task Force members. Mr. Benjamin Cosgrove asked for a brief summary of the cause of the off-nominal Soyuz TMA-1 re-entry. General Stafford suggested that Colonel James Adamson, U.S. Army (Ret.), respond to that question because he was part of the team that was briefed by the Russians on that issue. Colonel Adamson stated that his team received briefings from engineers at TsNIIMash and RSC-Energia on the ballistic reentry and explained that in the case of TMA-1, the yaw angle exceeded 54 degrees, causing the reentry mode change. The yaw angle limit exceedance was due to a low-probability, random lockup in the thruster command circuit of the landing system control unit. The lockup phenomenon happened in the yaw circuit that was not changed in the recent upgrade. While this phenomenon has been reproduced during post-flight testing at RSC-Energia, it has never been experienced in the 48-flight history of Soyuz, and is considered a very low-probability occurrence. RSC-Energia has developed a modification to the unit to avoid this type of mode change in the future, but it will not be available until TMA-3.

General Stafford asked the Task Force members if there were any objections to the findings that he presented. There were no objections. General Stafford concluded the meeting by saying:

*Then, based on our assessment, the Task Force believes that the ISS will be ready to accommodate its newest crew, that Mission Control-Moscow is ready, that the Expedition 8 crew will be fully prepared to successfully perform their mission, and that the Expedition 7 crew and combined ground forces are prepared for TMA-2's descent and landing. We wish both crews well.*

*If any concerns should develop as we proceed toward launch of the Expedition 8 crew, I will, of course, contact NASA and the Task Force immediately.*

*Thank you for your time.*

Todd McIntyre added his appreciation for the Task Force members, press, and public's participation in the Open Meeting. The meeting adjourned at 1:16 p.m., Eastern Daylight Time.

NASA Advisory Council  
Task Force on International Space Station Operational Readiness  
October 15, 2003  
NASA Headquarters  
Washington, DC

Task Force Membership

Chairman

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

Members

Col. James Adamson, U.S. Army (Ret.)  
Mr. Percy Baynes  
Dr. Kathy Clark  
Mr. Benjamin Cosgrove  
Mr. Joseph Cuzzupoli  
Dr. Charles Daniel  
Dr. Craig Fischer  
Mr. J. Milt Heflin  
Dr. Daniel Heimerdinger  
Maj. Gen. Ralph Jacobson, USAF (Ret.)  
Mr. Jim Lloyd  
Dr. Ronald Merrell  
Mr. David Mobley  
Dr. Shawn Rahmani  
Dr. Peggy Whitson  
Capt. John Young, USN (Ret.)

Technical Advisors

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

Executive Secretary

Mr. Todd McIntyre

Asst. Executive Secretary

Ms. Holly Stevens

NASA ADVISORY COUNCIL TASK FORCE ON INTERNATIONAL SPACE  
STATION OPERATIONAL READINESS

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Washington, DC

Meeting Attendees

Stafford Task Force Representatives

Chairman, Lt. Gen. Tom Stafford, USAF (Ret.)  
Colonel Jim Adamson, U.S. Army (Ret.), via teleconference  
Mr. Percy Baynes – via teleconference  
Dr. Kathy Clark – via teleconference  
Mr. Benjamin Cosgrove – via teleconference  
Mr. Joe Cuzzupoli – via teleconference  
Dr. Charles Daniel – via teleconference  
Dr. Craig Fisher – via teleconference  
Mr. Milt Heflin – via teleconference  
Dr. Daniel Heimerdinger – via teleconference  
Mr. Jim Lloyd  
Mr. David Mobley – via teleconference  
Dr. Shawn Rahmani – via teleconference

Stafford Task Force Technical Advisors

Mr. Mark Thiessen – via teleconference

Task Force Executive Secretary

Mr. Todd McIntyre

Task Force Asst. Executive Secretary

Ms. Holly Stevens – via teleconference

NASA

Ms. Renee Bouchard, NASA HQ, Code P  
Mr. Al Feinberg, NASA HQ, Code M  
Dr. Michael Greenfield, NASA HQ, Code ADT  
Mr. Todd Mitchell, NASA HQ, Code X  
Mr. Sam Scimemi, NASA HQ, Code M

Others

Mr. Brett Davis, Aerospace Daily, via teleconference  
Mr. Hugh Howie, PSGS Corp.  
Mr. Frank Moring, Aviation Week  
Mr. Chris Shank, U.S. House of Representatives, Committee on Science and Technology  
Ms. Gwyneth Shaw, Orlando Sentinel, via teleconference  
Mr. John Whiteley, KAA