

National Aeronautics and Space Administration

International Space Station Advisory Committee


**September 10, 2010
NASA Headquarters
Washington, DC**

OPEN MEETING REPORT





J. Donald Miller
Executive Secretary



Thomas P. Stafford
Chairman

NASA INTERNATIONAL SPACE STATION ADVISORY COMMITTEE

September 10, 2010
NASA Headquarters
Washington, DC

TABLE OF CONTENTS

Meeting Report:		Page 1-3
Attachment A:	Advisory Committee Membership	Page 4
Attachment B:	Meeting Attendees	Page 5

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MEETING REPORT

Dr. J. Donald Miller, Executive Secretary of the NASA International Space Station (ISS) Advisory Committee (AC), welcomed the participants and called roll. Dr. Miller introduced Lt. Gen. Thomas P. Stafford, USAF (Ret.), Chairman of the Advisory Committee, who then gave the following remarks:

Good afternoon and thank you for participating in this open meeting of the NASA International Space Station Advisory Committee. I'd like to start out by introducing our newest member, Wilson B. Harkins, Jr., who is the new Deputy Associate Administrator in the Office of Safety and Mission Assurance at NASA Headquarters, replacing Jim Lloyd, who retired this past December. He has a significant history in reliability and mission assurance in both the military and at NASA and we welcome Wil's contributions to our assessments.

Also, Committee Member Dr. Michael Duncan is not on the phone with us because he is busy helping the trapped miners in Chile. As you may know, NASA was asked by the Chilean government to assist with the rescue efforts by providing nutritional and psychological support because of NASA's experience in dealing with the rigors that come with long-term isolation in space. We will keep those miners and their families in our thoughts and prayers during this lengthy rescue mission and are glad they have experts like Dr. Duncan helping in this crisis. This gives me the opportunity to once again thank all of the committee members for their vast and varied expertise that not only contributes to NASA missions, but also to areas that ultimately have worldwide impact. Your work is greatly appreciated.

Thanks to all of you who engaged in the recent fact-finding meetings we held in July. In addition to our meetings, we also celebrated the 35th anniversary of the Apollo-Soyuz Test Project. The U.S. Ambassador to Russia -- John Beyrle -- RSC-Energia, and the Moscow Memorial Museum of Cosmonautics all had special events that my crewmates, Vance Brand, Alexi Leonov and Valeriy Kubosov, and I were very honored to participate in. The NASA Moscow Liaison Office did a great job of coordinating everything and it was a successful celebration of the United States' and Russia's first cooperation in space.

To review the areas that were covered our latest assessment, I'm going to read from the report from the Committee's meetings at TsNIIMash, where we met with the Russian Advisory Expert Council.

MEETING SUMMARY

At the direction of NASA and Roscosmos management, outlined in letters of February 14, 2008, and March 12, 2008, the NASA International Space Station Advisory Committee and Roscosmos Advisory Expert Council Joint Commission met at Korolev, Russia, July 20-22, 2010, to continue to evaluate the viability of the six-person crew on the ISS with

specific focus on crew safety and the challenges to the ISS program 6-PC operations.

The meeting opened with a comprehensive ISS Program Overview. The Joint Commission received detailed briefings by technical experts and concurs that the ISS Program plan presented supports near-term ISS 6-PC requirements. Continued success of future operations will rely not only on continued support of current scheduled logistics and crew vehicles, but also on the operational availability of new commercial resupply vehicles which, experience to date shows, have not achieved their the initial schedule. The impact of these and future delays is significant and the ISS Program is encouraged to identify and plan for alternative means of up-mass and down-mass resupply.

Conditions producing “Longeron Shadowing” have recently resulted in threats to both the structural integrity of the ISS solar array mast, and to the planned docking of visiting vehicles. The ISS operations teams of NASA and Roscosmos must continue to develop and maintain Flight Rules for planned dynamic operations, assuming the reoccurrence of similar systems malfunctions coupled with Longeron Shadowing.

Timely release of training documents and materials for the Soyuz 700 series, with upgraded on-board systems, to the US On-Orbit Segment crews has received management attention and has apparently improved, but will receive follow-up attention. The Joint Commission understands that much of the problem with releasing the documents to the US and other international crews is an export control issue that must be worked with the Russian Export Control Authority. The Joint Commission feels that getting the proper training materials to the crews must be resolved in the most expeditious manner; otherwise, crew training and the current flight schedule will be at significant risk.

The Joint Commission was briefed on issues related to ISS life support systems functionality. Given the current operational status of both the US and Russian on-orbit segment life support systems, it is imperative that these issues be resolved to maintain adequate redundancy of both carbon dioxide removal and oxygen generation to ensure ISS viability for 6-PC.

The Joint Commission received briefings on the metal shavings found when the ISS crew first ingressed MRM-1 and would like to commend the Russian partner for a thorough investigation which ultimately identified the source of the shavings and the cause that led them to be left in the MRM-1. Improvements have been made to ensure that, during assembly of racks, the racks are cleared of all debris prior to installation into the module.

The Joint Commission reviewed the docking anomalies associated with Progress M5 and M6. RSC-Energia has thoroughly investigated both of these anomalies and taken steps to resolve the problems. Progress M5 experienced a dual hardware and software failure which has been identified and resolved. The Progress M6 failure was associated with a combination of a communication and configuration problems which have likewise been identified and resolved. RSC-Energia is to be commended for its quick and efficient investigation and response to these problems.

The ISS operates in an environment with a high risk of Micrometeoroid and Orbital Debris impact. The ISS Program Office has in place strategies to mitigate the risk of impact from orbital debris greater than 10 centimeters and protect against particles less than one centimeter. One of the areas of high probability of penetration is the Service Module. A plan has been

initiated to install five shields to reduce the negative effect of an impact.

Current methods for assessing ISS MMOD risk lead to an unsupportable implication of precision in the probability of no penetration because they fail to account for the uncertainty of the estimate. The program should consider these uncertainties in future MMOD risk management strategies.

The Joint Commission notes that the medical organizations of Roscosmos, NASA and other ISS partners interact effectively to ensure the health of the ISS 6-PC before, during and after space flight, according to the requirements of the ISS MORD, SSP 50260. Also the Joint Commission recognizes the need for continued integrated and redundant approaches to maintain the health, safety, performance and well-being of the ISS 6-PC.

The Joint Commission reviewed the rationale and plans for “Direct Return” (R+0) operations and recognizes the need to maximize ISS science return through effective utilization of data collection assets.

The Joint Commission commends the ISS Program and the International Partners for the continued successful operation of the ISS with an international crew of six. The Joint Commission recognizes that continued vigilance is required to maintain the 6-PC capability.

The Joint Commission agreed to meet again in Houston to continue its review of the above issues. In preparation for that meeting, the Joint Commission will request additional information on the above mentioned topics from the appropriate Program points of contact.

That concludes the current report and summarizes the work accomplished by the Working Group during the recent meetings in Russia.

Given this report, do any Advisory Committee members have any questions? There were no questions from the members.

Are there any objections to the report? There were no objections.

General Stafford continued:

Fine, then based on our fact-finding meetings, the full Advisory Committee and Joint Commission concur with the assessment outlined here today.

CLOSING

General Stafford thanked the Committee for the expertise they bring to the deliberations and asked Dr. Miller, the Committee’s Executive Secretary, to conclude the meeting.

Dr. Miller added his gratitude for the Committee’s work on the assessment and adjourned the meeting at 11:15 a.m.

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Attachment A

ADVISORY COMMITTEE MEMBERSHIP

Chairman

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

Members

Col. James Adamson, U.S. Army (Ret.)

Mr. Percy Baynes

Mr. Joseph Cuzzupoli

Dr. Charles Daniel

Dr. Michael Duncan

Mr. Wilson B. Harkins, Jr.

Dr. Daniel Heimerdinger

Maj. Gen. Ralph Jacobson, USAF (Ret.)

Capt. Michael Lopez-Alegria, USN

Dr. Ronald Merrell

Technical Advisors

Maj. Gen. Joe Engle, USAF (Ret.)

Maj. Bob Maiberger, U.S. Army (Ret.)

Executive Secretary

Dr. J. Donald Miller

Asst. Executive Secretary

Ms. Holly Stevens

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Attachment B

MEETING ATTENDEES

Members

Col. Jim Adamson – via teleconference
Mr. Percy Baynes – via teleconference
Mr. Joe Cuzzupoli – via teleconference
Dr. Charles Daniel – via teleconference
Mr. Wilson B. Harkins, Jr. – via teleconference
Maj. Gen. Ralph Jacobson – via teleconference
Dr. Ronald Merrell – via teleconference
Lt. Gen. Thomas P. Stafford – via teleconference

Technical Advisors

Maj. Gen. Joe Engle – via teleconference
Maj. Bob Maiberger – via teleconference

Executive Secretary

Dr. J. Donald Miller

Asst. Executive Secretary

Ms. Holly Stevens – via teleconference

NASA

Ms. Meredith McKay, Office of External Relations, NASA Headquarters
Dr. Josef Schmid, Lead, Space Medicine Training; Flight Surgeon, Medical Operations Branch,
Johnson Space Center – via teleconference

Others

Mr. Koichi Kikuchi, Deputy Director, Japanese Space Agency, Washington, D.C. office