National Aeronautics and Space Administration

NASA Advisory Council Task Force
on
International Space Station Operational Readiness

September 30, 2004
NASA Headquarters
Washington, DC

MEETING REPORT

Original Signed By:

Todd F. McIntyre
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. 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. 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 the Russian Federal Space Agency Head, Anatoli Nikolayevich Perminov, the Task Force Working Group held discussions last week 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 10 mission.

As directed by our two Agencies, the NASA Advisory Council Task Force and Federal Space Agency Advisory Expert Council Joint Commission reviewed the safety and operational readiness of the International Space Station, the flight readiness of the Expedition 10 crew, and the Russian and U.S. flight control teams' preparedness to accomplish the Expedition 10 mission. Additionally, the TF-AEC reviewed preparations for the Expedition 9 crew landing and crew recovery from the landing site.

General Ralph Jacobson, who led the working group to Moscow, is unable to be here, but Colonel Jim Adamson, a member of the Working Group, has agreed to share the group's findings with you.

Colonel Jim Adamson:

Thank you General Stafford. I would like to say good afternoon to everyone as well. I will summarize our recommendations and findings first and then I'll cover the logistics of our trip and finally the specifics of our observations and recommendations.

The TF-AEC Joint Commission finds that the Expedition 10 crew is fully trained and successfully passed both proficiency and medical examinations. In addition, the Russian and U.S. flight control teams are prepared to support the Expedition 10 mission which includes two planned EVAs. The ISS is safe and operationally ready to support the crew for the duration of their mission. Finally, with the exception of a fuel leak discovered this last Monday during final testing at Baikonur, all vehicle and operational reviews have

been completed to support the safe ascent of the Expedition 10 crew on Soyuz TMA-5 and the safe descent and landing of the Expedition 9 crew aboard Soyuz TMA-4.

The findings of this report resulted from meetings in Moscow, Russia, on September 21-23, 2004, conducted at TsNIIMash and the Gagarin Cosmonaut Training Center (GCTC). The briefings conducted at TsNIIMash on September 21 included the following topics: ISS program overview and status; MCC-M and MCC-H Readiness; ISS Russian Segment and U.S. Segment Systems Readiness; Extra-Vehicular Activity; and Medical Operations. The briefings conducted at GCTC on September 22 included Expedition 10 Crew Training, Expedition 9 Crew Return Readiness, and the Search and Rescue Complex Readiness. Briefings at TsNIIMASH on September 23 included Soyuz TMA-5 Transport Vehicle Launch Readiness and Soyuz TMA-4 Transport Vehicle Landing Readiness.

From these briefings, the Joint Commission produced the following observations and recommendations:

Consumables Reserves

Funding problems have delayed KURS and Kloest docking system components for "Progress M-51" (16P) and, consequently, the launch of 16P has slipped from November 24, 2004, to December 23, 2004. The agreed-upon 45-day consumables reserve may be reached before the arrival of 16P in December. This is the date at which the Program would normally decrew the ISS in order to preserve sufficient supplies to recrew at a later time. This is the first time in the history of the program that the agreed-upon consumables reserves may be reached. Planning for de-crewing normally begins 30 days prior to the date at which the 45-day reserve level is reached so that sufficient time is available to plan and implement an orderly decrewing. The Program is presently refining its de-crew and re-crew plans.

The Joint Commission stresses the need to have both U.S. and Russian managers jointly agree upon the precise conditions that would result in a decision to decrew the ISS, prior to the launch of Expedition 10.

Elektron

All systems of the Russian segment, except the Elektron, are operating nominally. A failure of the liquid unit of Elektron in August, 2004, resulted in cavitations in its micropumps which caused gas bubbles in the water. Additionally, the failure of the internal gas analyzer resulted in the loss of automatic shutdown capability. Replacement of the failed liquid unit restored functionality to Elektron but not the automatic shutdown capability. A number of actions to fully restore Elektron to nominal operations are planned. It was also noted that this problem with Elektron operation is not immediately critical since there are a number of redundant oxygen generating systems available on board the ISS, including oxygen bottles and Solid Fuel Oxygen Generators (SFOGs). Provided Progress 16P and 17P are launched as currently scheduled, the supplies of food, oxygen, water and propellant on board ISS are sufficient to support Expedition 10 during their entire 6-month stay, even if the Elektron is not functioning.

Soyuz TMA-5 Explosive Bolt

During routine electrical circuitry testing, an explosive bolt in Soyuz TMA-5's docking system unexpectedly fired. RSC-Energia has installed a new docking mechanism, and has conducted a thorough test and investigation into the cause of this anomaly. The investigation showed that several factors could simultaneously contribute to cause this low probability event. While no single root cause of the anomaly has been discovered, the thorough testing and investigative work performed by TMA-5 experts, together with the long successful history of this system, give the Joint Commission confidence in the vehicle's readiness for flight. Additionally it has been stated that this particular failure cannot happen unless the ground test unit is attached.

Medical Operations

The environmental conditions on board ISS are nominal and adequate to support the Expedition 10 crew. Environmental monitoring is considered vital and should be continued by returning air and water samples as appropriate. Components of countermeasure equipment are sequentially approaching the end of their service life. Delivery of replacement hardware and supplies should be prioritized to ensure the continued health of the crew. The decision is in place to deliver the BD-1 treadmill as a backup to TVIS.

EVAs

Two EVAs (Numbers 12 and 13) are planned for Expedition 10. Both EVAs will be performed using the Russian Orlan suits, egressing through Docking Compartment 1 (PIRS). There are currently five operational Russian Orlan suits and three U.S. Extra-vehicular Mobility Units (EMUs) on ISS. Two EMUs are operational, and one is inoperable. Of the two operational EMUs, one needs to be recertified for use. The Joint Commission believes there are no significant issues with the training or plans for the EVAs.

Soyuz TMA-5 Control Thruster Bladder Leak

Subsequent to the completion of deliberations and the readiness letter signed by the Joint Commission in Moscow on Thursday, 23 September 2004, the Russians reported on Monday, 27 September, that during testing a leak occurred, or was discovered, in the bladder of the fuel tank for the descent module control thrusters of the TMA-5 vehicle. Energia is currently working this issue, and has set a not earlier than 14 October launch date for the Expedition 10 crew. We will, of course, monitor this new problem, communicate closely with our Russian Joint Commission Experts, and rely heavily on their assessment and recommendations. Anything that might occur to change our go-for -launch recommendation will be immediately communicated throughout the Joint Commission and to the Administrator of NASA. This concludes our report.

Colonel Adamson turned the meeting back over to the Chairman, Lt. Gen. Thomas Stafford:

General Stafford:

Do any Task Force members on line have any questions concerning the review Jim outlined?

There were no objections or questions regarding the findings.

Fine. Then, based on our assessment, and with the exception of the recently discovered Soyuz fuel leak, the full Task Force and Joint Commission concur with the findings that the Expedition 10 crew is fully trained and ready for their mission; the Russian and U.S. flight control teams are prepared to support Expedition 10; the ISS is safe and operationally ready to support the crew for the duration of their mission, and (upon satisfactory resolution of the Soyuz fuel tank leak issues), all vehicle and operational reviews have been completed to support the safe ascent of the Expedition 10 crew on Soyuz TMA-5 and the safe descent and landing of the Expedition 9 crew aboard Soyuz TMA-4.

We will continue to follow the mission preparations for an anticipated launch of the Expedition 10 crew scheduled to occur no earlier than October 14, 2004. If any additional concerns should develop as we proceed toward the launch of the Expedition 10 crew, I will, of course, contact NASA and the Task Force immediately.

We wish both crews well.

Thank you for your time. I'll now turn this over to Todd McIntyre

Todd McIntyre:
Thank you for your participation and I adjourn this meeting at 1:11 p.m., Eastern Time.

Attachment A

NASA Advisory Council
Task Force on International Space Station Operational Readiness
September 30, 2004
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.)
Maj. Bob Maiberger, U.S. Army (Ret.)

Executive Secretary

Mr. Todd McIntyre

Asst. Executive Secretary

Ms. Holly Stevens

Attachment B

NASA ADVISORY COUNCIL TASK FORCE ON INTERNATIONAL SPACE STATION OPERATIONAL READINESS

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Meeting Attendees

Stafford Task Force Representatives
Chairman, Lt. Gen. Tom Stafford, USAF (Ret.) – via teleconference
Colonel Jim Adamson, U.S. Army (Ret.)
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 Fischer - via teleconference
Mr. Milt Heflin – via teleconference
Dr. Daniel Heimerdinger - via teleconference
Mr. Jim Lloyd
Dr. Ron 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
Maj. Bob Maiberger – via teleconference

Task Force Executive Secretary
Mr. Todd McIntyre

Task Force Asst. Executive Secretary
Ms. Holly Stevens – via teleconference

NASA
Mr. Dave Herbek, NASA HQ, Office of Space Operations
Mr. Stephen McGinley, NASA HQ, Office of Legislative Affairs
Ms. Meredith McKay, NASA HQ, Office of Space Operations
Mr. Joesph Monroe, NASA HQ, Office of External Relations/Space Operations Division
Ms. Debra Rahn, NASA HQ, Office of Public Affairs
Mr. Al Sofge, NASA HQ, Office of Space Operations

Others

Mr. Ivan Lebedev, ITAR-TASS News Agency – via teleconference
Mr. Johannes Loschnigg, House Science Committee
Ms. Gwyneth Shaw, Orlando Sentinel – via teleconference