

**National Aeronautics and Space Administration**

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

**February 7, 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**

February 7, 2001  
NASA Headquarters  
Washington, DC

**MEETING REPORT**  
**TABLE OF CONTENTS**

Attachment A	Task Force Membership
Attachment B	Meeting Attendees

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

February 7, 2001  
NASA Headquarters  
Washington, DC

## MEETING REPORT

Task Force Executive Secretary Philip Cleary welcomed the participants to the NASA Advisory Council (NAC) International Space Station (ISS) Operational Readiness (IOR) Task Force Open Meeting. This meeting was conducted to apprise the Task Force (TF) members of the results of the IOR Task Force Expedition Two Working Group's assessment of the ISS's operational readiness to support the Expedition Two crew as well as the American and Russian flight team's preparedness to accomplish the Expedition Two mission. The assessment was conducted at the request of NASA Administrator Daniel Goldin and Rosaviakosmos General Director Yuri Koptev and was performed jointly with the Rosaviakosmos (Utkin) Advisory Expert Council (AEC). Members of the Task Force's Expedition Two Working Group participated via teleconference from Moscow, Russia, where they just completed extensive briefings on ISS issues related to the Expedition Two mission. Experts from the Gagarin Cosmonaut Training Center (GCTC), the Institute of Biomedical Problems (IBMP), RSC-Energia, Khrunichev SRPC, Central Research Institute for Machine Building (TsNIIMash), and Mission Control Center-Moscow (TsUP) briefed the team. Task Force Chairman Lt. General Thomas Stafford, USAF (Ret.), was unavailable, therefore the Working Group Chairman Colonel Jim Adamson, USA (Ret.) led the meeting.

Colonel Adamson began his remarks by recognizing the 100<sup>th</sup> day of the Expedition One crew's habitation of the ISS, expressed his congratulations, and called it a "notable benchmark."

He explained that the Working Group's joint assessment with the Russian Utkin AEC members focused on the following issues:

- Training of the Expedition Two crew
  - Extravehicular Activity (EVA)
  - Teleoperated Rendezvous Unit (TORU)
  - American Segment Trainer (AST) Status
- Status of Onboard Systems
  - Flight Software
  - Laptop Computers
  - Acoustic Environment
  - Smoke Detectors
  - Batteries
- Mission Control Center-Moscow (MCC-M) Ground Control Team Handover
- Medical Support
- Status of the ISS Atmosphere

The TF-AEC Joint Commission will continue joint assessments on these and additional issues during meetings in Houston, Texas at the Johnson Space Center, February 19 – 23, 2001.

### TRAINING

Colonel Adamson stated that the Expedition Two crew is highly experienced. The Russian Commander (Yuri Usachev) has flown two long duration flights to Mir as a Flight Engineer. The U.S. flight crew (Susan Helms and Jim Voss) has multiple Shuttle flights between them as well.

#### *EVAs*

In November 2000, the Russian Flight Committee certified the team for flight. The crew is currently at NASA's Johnson Space Center completing its training and is expected to be fully certified for flight within the next few weeks. The crew has three scheduled EVAs during their mission. The Working Group believes them to be completely trained to accomplish the EVAs, so there are no EVA issues.

#### *TORU*

The crew has performed over 150 simulations on the TORU docking system and is well prepared should manual docking of Russian vehicles be required. Colonel Adamson explained that the TORU system is only a backup and is not expected to be used. However, TORU training will continue onboard the ISS to maintain crew proficiency.

#### *AST*

There was an issue of late delivery several months ago regarding the American Segment Trainer (AST) at GCTC. The Working Group was pleased to learn that the problem has been resolved and the AST is fully operational at GCTC in the ISS flight 5A configuration.

### STATUS OF ONBOARD SYSTEMS

#### *Flight Software*

Task Force member Charles Daniel, Ph.D., reported that while in Moscow the Working Group received numerous informative briefings from the Russian ISS software experts. All end-to-end ground tests of the Service Module software version 5.0 will have been completed prior to the Expedition Two crew's arrival.

#### *Laptop Computers*

Dr. Daniel explained that the laptop computers are an area of concern due to a number of failures that have occurred. The Program Office is aware of these anomalies and is working to correct the problems. The Working Group will receive briefings from the JSC laptop experts during the upcoming TF-AEC joint meetings in Houston concerning both the problems and the acceptance of the hardware.

#### *Acoustic Environment*

The Working Group received briefings on the acoustic levels experienced by the crew. This has been an area of concern for the Joint Commission. Currently, hearing protection and measurement devices are employed and additional noise abatement equipment is

being readied for flight to the ISS. Future flights to the ISS will include panel blankets and noise dampening devices for the Vozduhk and fans. Medical experts would like to achieve noise levels of no greater than 60 decibels (dB). The Working Group will continue to monitor the acoustic levels and the success of the noise abatement equipment as it is implemented onboard.

#### *Smoke Detectors*

Smoke detectors in the Functional Cargo Block (FGB) emitted false alarms a few months ago. Dr. Daniel explained that the false alarms have been evaluated and the problem is now understood to have been an electrical circuit timing problem. New detectors have been installed and there are no issues or concerns at this time.

#### *Batteries*

Early on during the deployment of the Expedition One crew, there were problems associated with the FGB and Service Module (SM) batteries. All six batteries and charger regulator units (PTABs) in the FGB have since been replaced. The eight SM batteries and PTABS have been installed and are online. All are operating nominally. Two failed SM PTABs from initial startup are still on-orbit and are awaiting return to Russia for analysis. There are no issues or concerns at this time with the battery/PTAB assemblies.

#### MCC-M TO MCC-H GROUND CONTROL HANDOVER

Proposed plans for the handover of ground control from MCC-Moscow to MCC-Houston was presented to the Working Group. The ISS Program Office assigned Bill Reeves, NASA Flight Director, to work with his Russian counterparts to evaluate the operational requirements, technical requirements, and constraints to safety in implementing this action, which is planned to occur after the arrival of 5A. The flight controllers from both countries are discussing this issue and the Working Group expects a resolution prior to the Expedition Two crew's arrival.

#### MEDICAL ISSUES

Dr. Arnauld Nicogossian presented the Working Group's findings regarding ISS medical issues. Both the Russian and U.S. medical experts believe progress has been made in closing many of the open actions from the last mission. Several issues he would like to see addressed regarding the upcoming Expedition Two and future crews are:

1. Monitoring of the environment to maintain habitability and crew health.
2. Making radiation monitoring a high priority.
3. Cross cultural training for the crewmembers.

#### SUMMARY

Colonel Adamson concluded his remarks by stating that the briefings provided to the Task Force Working Group-AEC Joint Commission by the Russian experts were comprehensive and complete. The questions posed by the Joint Commission were candidly answered and open discussions were achieved. Additionally, the Joint Commission noted that the anomalies and issues that exist are being effectively managed and the Joint Commission is confident that they will be satisfactorily addressed before the Expedition Two crew's scheduled launch.

Colonel Adamson opened the floor to questions. Task Force member Benjamin Cosgrove questioned the overall evaluation process for the laptop computers. Dr. Daniel stated that the laptops are being extensively checked out, but that the Working Group wants to confirm the acceptance test procedures prior to their being committed to orbit. He added that the laptops are Consumer Off-the-Shelf (COTS) products that are procured to vendor specifications, not government specifications. The government is doing certain in-house testing and the Working Group wants to assure its comprehensiveness.

Task Force member Shawn Rahmani, Ph.D., asked if the laptops and the software are supposed to be integrated with the rest of the flight software as part of the overall integrated tests. Dr. Daniel explained that the human/machine interface is occurring on the device being used to enter commands both in training and on the ground. In certain cases they are not using true laptops, but rather Flight Equivalent Units (FEUs). Dr. Daniel said that they are using the best hardware for the tests they are running.

Mr. Cosgrove stated that he realizes that the targeted dB level in the ISS is 60dB, but questioned what dB level the medical experts hope to achieve once all the noise attenuation devices are in place. Dr. Daniel explained that the dB level cannot be accurately predicted at this point and that the noise level will be reassessed once all of the dampening systems are in place.

Colonel Adamson thanked the participants and stated that, based on the Working Group's assessment, the members believe that the Expedition Two crew will be fully prepared to successfully perform their mission and the ISS will be ready to accommodate its newest crew by the scheduled launch date of March 8, 2001.

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

February 7, 2001  
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  
Mr. Benjamin Cosgrove  
Mr. Joe Cuzzupoli  
Dr. Charles Daniel  
Dr. John Fabian  
Dr. Craig Fischer  
Dr. Michael Greenfield  
Mr. Milt Heflin  
Dr. Dan Heimerdinger  
Maj. Gen. Ralph Jacobson, USAF (Ret.)  
Cmdr. Michael Lopez-Alegria, (USN), Astronaut Representative  
Dr. Ronald Merrell  
Mr. David Mobley  
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**

NASA ADVISORY COUNCIL TASK FORCE ON INTERNATIONAL SPACE  
STATION OPERATIONAL READINESS

February 7, 2001  
NASA Headquarters  
Washington, DC

**Meeting Attendees**

**Stafford Task Force Representatives**

Col. Jim Adamson, USA (Ret.) – via teleconference  
Mr. Percy Baynes – via teleconference  
Mr. Benjamin Cosgrove – via teleconference  
Dr. Charles Daniel – via teleconference  
Dr. John Fabian – via teleconference  
Dr. Michael Greenfield – via teleconference  
Dr. Ronald Merrell – via teleconference  
Mr. David Mobley – via teleconference  
Dr. Shawn Rahmani – via teleconference  
Capt. John Young, USN (Ret.) – 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

**NASA Headquarters**

Ms. Jennifer McCarter, Code I  
Mr. Paul Shawcross, Code W

**Others**

Mr. Bill Adkins, U.S. House of Representatives Science Committee, Space  
Subcommittee  
Mr. Frank Moring, Aerospace Daily  
Mr. Charlie Walker, Boeing