FEDERATION AERONAUTIQUE INTERNATIONALE

FAI ASTRONAUTIC RECORDS COMMISSION (ICARE)

MEETING TO BE HELD AT THE FAI HEADQUARTERS
24 AVENUE MON REPOS, 1005 LAUSANNE, SWITZERLAND
FRIDAY 25 APRIL 2003, STARTING AT 10h00

A G E N D A

1 WELCOME BY THE PRESIDENT AND ROLL-CALL
Welcome to new delegates

2 APPROVAL OF THE MINUTES OF THE LAST MEETING (19 April 2002)
Matters arising from those Minutes.

3 GENERAL CONFERENCE

a. Report on Dubrovnik FAI General Conference

4 ASTRONAUTICS ACTIVITIES AND PROJECTS

a. Report by Delegates from Member countries
b. X Prize Project – Progress Report

5 FAI SPORTING CODE

SECTION 8 (ASTRONAUTICS)

a. Proposals for new record categories in connection with "X Prize". Letter from ICARE President dated 3 May 2002 containing proposals attached *(already supported in writing by France, Italy, USA*).

b. Paragraph 5.2.1.4: In 2002, ICARE noted the need to specify which axes are used for measurement, geocentric axes rotating with the earth or fixed geocentric axes. Dr Sanz Fernandez de Cordoba will make proposals.

6 PROPOSALS FOR FAI AWARDS

a. Yuri Gagarin Gold Medals
b. Komarov Diplomas
c. Korolev Diplomas

Citations are attached.

7 INTERNATIONAL ASTRONAUTIC FEDERATION

Report on the 2002 IAF Congress and nomination of FAI delegate to the 2003 IAF Congress.

8 PRESENT WORLD RECORDS - REPORT

9 ANY OTHER BUSINESS

10 ELECTIONS

11 DATE AND PLACE OF NEXT ICARE MEETING

FEDERACION AERONAUTICA INTERNACIONAL

COMISION INTERNACIONAL DE RECORDS ASTRONAUTICOS(ICARE)

PRESIDENTE

ICARE Delegates
FAI Secretary

3 May 2002

Dear Sirs,

According to the decisions taken in our last meeting in April, here is my proposal for the introduction of new records on reusable spaceships. All the amendments proposed refer to Chapter 8 of the Sporting Code, which is our responsibility (Chap 8, rule 1.4)

a. - Modify current definition in rule 2.6:

Currently, the last part of such definition reads "… For near space missions the reference axis will be centred at the Earth Centre but not rotating with Earth, as defined in paragraph 2.12.6".
The proposal is to reword this part to read: "… For near space missions the reference axis will be centred at the Earth Centre but not rotating with Earth. For suborbital flights, as defined in paragraph 2.12.6, the reference axis will be centred at the Earth Centre and rotating with Earth. ".

b. - Introduce a new definition as paragraph 2.6.1 as follows:

"2.6.1 TAKE-OFF EMPTY MASS: The total mass of the spaceship at take-off place and time, excluding the masses of the crew, the propellant and all other consumables needed for the mission. If part of the crew and their life supporting consumables are replaced by ballast, that ballast will not count for the total mass.

c. - Add a new subparagraph c) to paragraph 2.2 Definitions and classes of space ship as follows:

"c) Reusable Spaceship (Class K or Class P) : A spaceship capable of making two manned consecutive flights in such manner that a minimum of 90% (in mass) of the elements constituting the take-off empty mass of the first flight will be present in the take-off empty mass of the second flight.

d. - Introduce a new record for aerospacecraft as paragraph 5.2.1.5 as follows:

"5.2.1.5 Number of people in suborbital flight"
NOTE: This was not discussed in our meeting. But since this record exists for spacecrafts as 4.2.1.5, I think that not having it for aerospacecraft is an overlook.

e. - Introduce two new records for suborbital flights as paragraphs 4.2.1.6 and 5.2.1.6 as follows (exactly the same wording):

"Minimum time between two consecutive flights in a reusable vehicle. The time is to be measured from the time of termination of the first flight to the time of take off of the second flight.
Notes: Both flights have to comply with all other conditions for completed space flights. The record holder will be the crew commander of the second flight."

I will welcome all your comments, corrections, suggestions, etc.

Yours sincerely

Dr. S. Sanz Fernández de Córdoba

Jorge Juan 13 / 28001 Madrid / ESPAÑA / Tel (34) 91 564 9298 / Fax (34) 91 577 9673
Avenue Mon Repos 24 / 1005 Lausanne / SUISSE / Tel +41 21 345 1070 / Fax +41 21 345 1077

U.S.A.
Nomination for the Fédération Aéronautique Internationale
Yuri A. Gagarin Gold Medal

Nominees: **The International Space Station Expedition 4 Crew**

Onufrienko, Yury Ivanovich, Colonel, Russian Air Force
Carl E. Walz, Colonel, USAF
Daniel W. Bursch, Captain, USN

Affiliations: Colonel Walz and Captain Bursch: NASA Astronauts
Colonel Onufrienko: Russian Cosmonaut

Suggested Citation:

For the successful completion of the fourth Expeditionary mission to live and work on board the International Space Station (ISS).

Justification:

The Expedition 4 crew launched to the ISS on board STS-108 on December 5, 2001, and returned to Earth on June 19, 2002, on STS-111, completing 196 days in space. This duration represents a record stay for U. S. Astronauts on a single space flight. The Expedition 6 crew oversaw the delivery and installation of a new ISS truss segment S0, and installation of the Mobile Transporter. They hosted the visit of an international Soyuz taxi crew and completed three planned Extravehicular Activities (EVA's) or space walks to perform critical maintenance and assembly tasks on the Station. In addition, the crew, along with both control centers in Houston and Moscow, supported the upgrade of the station's system software and recovered from a Loss of Attitude Control (LOAC) contingency situation.

The crew began preparing for this ambitious flight in 1997. Serving as the back-up crew for Expedition 2 and the prime crew for Expedition 4, ISS Commander Onufrienko and his colleagues, Colonel Walz and Captain Bursch, began an extensive training program that was conducted in Russia and the United States. During this period they learned the operations of both the Russian and the U. S. segments of the Space Station, as well as the operations of the Soyuz capsule that was to be available to them as a descent vehicle in the event of an in-flight emergency. After four years of intensive training, the crew launched to the ISS on the Space Shuttle Endeavor.

The first major event of the Expedition 4 increment was the undocking of the Progress M1-6 Cargo transport vehicle. The Progress M1-7 vehicle arrival to ISS followed later in the increment with the crew participating in guiding it to a rendezvous and docking. The crew also hosted two shuttle flights: STS-110 (8A) and 111 (UF2). Additionally, the crew relocated the Soyuz TM-33 transport vehicle from the FGB pressurized adapter to the Russian docking compartment DC-1 to facilitate the arrival of a visiting Soyuz Taxi crew, Soyuz TM-34.

The crew executed three EVA's from the Station. The first of these, by Onufrienko and Walz, was performed in the Russian Orlan suit from the DC-1 and accomplished the primary task of

moving the Russian cargo boom (Strella) from its temporary stowage location to its permanent location on DC-1. In addition, the crew installed a ham radio antenna on the Service Module. Onufrienko and Bursch performed the second Orlan EVA from the DC-1. This EVA included external payload, handrail, cable holder (Ham radio antenna) and plume deflector installations.

Walz and Bursch performed the third and final EVA of the increment, this time in the U. S. Extravehicular Mobility Unit (EMU) from the ISS Airlock. This EVA, the first U. S. based EVA to be performed during a stage, entailed resolution of Airlock anomalies from previous missions, relocation/retrieval of ISS tools, mating of electrical umbilicals, shroud removal, relocation of Strella adapters and inspection of multiple quick disconnects (QDs) on various station interfaces.

The Expedition 4 crew experienced one of the Station's most significant and risky anomalies, a Loss of Attitude Control (LOAC). The extraordinary skills of the crew were clearly evident through their teamwork, quick thinking, and calm execution of appropriate procedures. Their efforts, coupled with the ground's quick response, enabled rapid recovery to a nominal situation.

As commander of the mission, Onufrienko was on his second space flight having served also as commander of the 193 day Mir-21 mission. Onufrienko has now logged 389 days in space. As the ISS commander, Onufrienko was responsible for the overall safety and mission operations of the crew, in addition to being responsible for all Russian systems and payload experiments.

This was the fourth flight into space for Walz who, having flown on STS-51 (1993), 65 (1994), and 79 (1996), has now logged over 231 days in space. As Flight Engineer 1 on both the ISS and Soyuz, he was responsible for the all U. S. systems of the Space Station, focusing on the computer Local Area Network (LAN), environmental and communication-systems and for assisting Commander Onufrienko with Soyuz operations. Walz also was the primary operator for numerous U.S. payload experiments.

This was also ISS Flight Engineer 2 Daniel Bursch's fourth flight into space. He flew on STS- 51 (1993), 68 (1994), and 77 (1996). With this flight to the ISS, Captain Bursch has now logged over 227 days in space. On board the ISS, he was primarily responsible for the U. S. command and data and robotics systems in the U. S. segment, while serving as the ISS Chief Medical Officer. In addition, Bursch was the primary operator for a majority of the U. S. payloads.

The flight of the fourth Expedition was an extremely important milestone for the ISS program. The crew demonstrated outstanding international cooperation in space, set a record for on-orbit time for U. S. Crew members and exhibited an incredibly high level of skill and professionalism during the demanding mission. The Expedition 4 crew members are most highly deserving of the prestigious Yuri A. Gagarin Gold Medal.

U.S.A.
Nomination for the Fédération Aéronautique Internationale
Komarov Diploma

Nominees:	**The Crew of Mission STS-113**	
	Capt. James D. Wetherbee, USN	Commander
	Lt. Col. Paul S. Lockhart, USAF	Pilot
	Capt. Michael E. Lopez-Alegria, USN	Mission Specialist 1
	Lt. Cdr. John B. Herrington, USN	Mission Specialist 2
	Entry Only:	
	Col. Valeri Grigorievich Korzun, Russian AF	Commander, Exp. 5
	Peggy A. Whitson, Ph.D.	Science Officer, Exp. 5
	Sergei Yevgenyevich Treschev	Flight Engineer, Exp. 5
	Launch Only:	
	Capt. Kenneth D. Bowersox, USN	Commander, Exp. 6
	Donald R. Pettit, Ph.D.	Science Officer, Exp. 6
	Nikolai Mikhailovich Budarin	Flight Engineer, Exp. 6
Affiliation and Position:	The crew includes seven NASA astronauts and three Russian cosmonauts.	
Proposed Citation:	For successful completion of International Space Station (ISS) mission 11A, the first mission to the ISS that comprised both a crew rotation and completion of a major assembly task.	

The crew of STS-113, ISS mission 11A, was launched aboard the Space Shuttle Endeavour on November 23, 2002, from the Kennedy Space Center, Florida, and landed there fourteen days later on December 7, 2002. The twofold objectives of the mission were to deliver the crew of ISS Expedition 6 to the ISS and return the crew of ISS Expedition 5 to Earth. They also installed and connected the Port 1 (P1) integrated truss segment to the ISS. Never before had crew rotation and installation of such a major component been attempted on the same mission.

Following launch, the STS-113 crew maneuvered Endeavour to begin the rendezvous with the ISS and concluded with a flawless docking on the third day of the mission. After hatch opening, the ISS Expedition crews expeditiously and effectively performed the necessary transfer and checkout of personal equipment to ensure the crew exchange, and the STS-113 crew began preparations for the following day's robotics and space walk activities.

On the fourth day of the mission, the members of the 113 crew began operations as three separate groups. One group operated the robotic arm on the Space Shuttle flight deck, another group operated the robotic arm in the ISS Destiny module, and the third group was the Extravehicular Activity (EVA) crew in the ISS Quest airlock. They all worked in parallel to begin the task of P1 installation. Commander Wetherbee, assisted by commander Bowersox, grappled the truss with the Shuttle's robotic arm, expertly unberthed it from of the payload bay, and maneuvered it to an intermediate position. Dr. Whitson, on board ISS, then maneuvered the ISS robotic arm and grappled the P1. After P1 was

released by the Shuttle's arm, Dr. Whitson perfectly maneuvered it to the ready-to-latch position, at which time Dr. Pettit operated the ISS segment-to-segment attach system to firmly mate the P1 to the Station. During this activity, Commander Korzun assisted Mission Specialists Lopez-Alegria and Herrington during suit-up and preparation for the first of three space walks. During this EVA, led from the Shuttle flight deck by pilot Lockhart, the power, data, and video connections were made, the Crew Equipment and Translation Aid (CETA) 2 launch locks and restraints were removed, and the first of two Wireless Video System (WVS) antennas, which allow helmet-mounted camera video to be seen during EVA when the Shuttle is not present, was installed.

The second EVA began with Lopez-Alegria and Herrington, again directed by Lockhart, installing two fluid jumpers, used to carry supply and return cooling ammonia to the P1 radiators. They then removed and stowed two keel structures, which helped secure the P1 in the Shuttle's payload bay during launch, but which impeded movement of the CETA carts and the ISS robotic arm's Mobile Transporter (MT). They then installed the second WVS antenna and, with Pettit operating the ISS robotic arm carrying Herrington, relocated CETA 2 to the starboard side of CETA 1 on the S1 truss to allow the MT to be moved to the port worksite on P1 in preparation for the third EVA.

The third space walk began inauspiciously as Herrington was asked to investigate why the MT had stalled while translating to port. He quickly discovered that the problem was that a UHF antenna, which was not planned to be deployed as part of this mission, and which was impeding movement of the MT. Herrington deployed the antenna, but it was too late to be able to use the ISS robot arm as a work platform as planned. The EVA ground and flight teams quickly and expertly replanned the entire EVA such that all of the preflight objectives of the EVA were accomplished.

The flawless execution of this extremely complex and critical assembly mission – one normally accomplished with a fully dedicated crew of six or seven – by the STS-113 primary crew of four, attests to their superlative technical acumen and tireless dedication. The Expedition 5 and 6 crews' consummate professionalism is evidenced by their ability to perform a complete and thorough ISS handover – an activity that typically takes many hours of dedicated time – and still perform critical functions in support of robotics and EVA, as well as cargo and science payload transfer. The successful accomplishment of this ambitious mission is a key milestone in the future assembly and operation of the International Space Station and makes the STS-113 crew abundantly deserving of the Komarov Diploma.

U.S.A.
Nomination for the Fédération Aéronautique Internationale
Komarov Diploma

Nominees: **The International Space Station Expedition 5 Crew**

Valery Gregorovich Korzun, Colonel, Russian Air Force
Peggy Annette Whitson, Ph.D.
Sergey Evginivich Treshev, Russian Space Agency

Affiliations: Dr. Peggy Whitson: NASA Astronaut
Colonel Korzun and Mr. Treshev: Russian Cosmonauts

Suggested Citation:

For the successful completion of the fifth Expeditionary mission to live and work on board the International Space Station (ISS).

Justification:

The Expedition 5 crew launched to the ISS on board STS-111 on June 5, 2002, and returned to Earth on December 7, 2002, onboard STS-113 completing 184 days and 22 hours in space. During this time, they oversaw the installation of one of the Space Station Remote Manipulator System components, the Mobile Base System (MBS) as well as the large S1 and P1 (starboard and port) truss segments. They also completed two Extravehicular Activities (EVA's), or space walks, to perform critical maintenance and assembly tasks on the Space Station, and hosted the visit of an international Soyuz crew.

The crew began preparing for this ambitious flight in 1999 when Colonel Korzun was named as commander of the fifth mission to ISS. He and his colleagues, Peggy Whitson and Sergey Treshev, began an extensive training program that was conducted in Russia and the United States. During this period they learned the operations of both the Russian and the U.S. segments of the Space Station, as well as the operations of both the Soyuz TM and TMA capsules that were to be available to them as descent vehicles in the event of an in-flight emergency. Following two and one-half years of intensive training, the crew launched to the ISS on the Space Shuttle Endeavour.

Their tour of duty as ISS crew members began on June 7, 2002, when the STS-111 Shuttle docked to the ISS, the Expedition 4 crew members became STS-111 Shuttle crew members, and the Expedition 5 crew members became the resident ISS crewmembers. During their stay aboard the ISS, the crew bid farewell to the Progress 8 transfer vehicle and oversaw the approach and subsequent docking of Progress 9.

The crew performed two EVA's in the Russian Orlan spacesuit. The first EVA (EVA-7 for the ISS) was performed by Valery Korzun and Peggy Whitson on August 16, 2002, from the Russian Docking Compartment DC-1. The total duration of the EVA was 4 hours and 22 minutes and the installation of 6 Service Module (SM) Micrometeoroid Debris Shields was successfully completed.

The second EVA (EVA-8 for the ISS) was performed by Valery Korzun and Sergey Treshev on August 26, 2002, also from DC-1. The total EVA duration was 5 hours, 22 minutes. The EVA program was performed completely. The primary tasks completed during the EVA were:

- Installation of a routing device for the U.S. tether system
- Installation of a mounting bracket for use on future EVA's
- Installation of 2 new HAM radio antennas
- Retrieval of external Russian and NASDA experiments.

As commander of the mission, Colonel Korzun was responsible for the overall safety and mission operations by the crew on what was his second space flight.

For Dr. Peggy Whitson, this was the first flight into space and she was designated the first ISS Science Officer. Onboard ISS, she was responsible for all systems in the U. S. segment and her responsibilities as science officer were to oversee all science operations that took place onboard ISS. This included some 27 experiments in human physiology, plant growth, protein crystal growth, and materials science.

This was flight engineer Sergey Treshev's first flight into space. He was also flight engineer for the Soyuz operations and would have assisted Col. Korzun in flying the Soyuz should that have been necessary. On board the ISS, he was responsible for all systems in the Russian segment.

The flight of the fifth expedition was an extremely important milestone for the ISS program. The crew demonstrated impressive international cooperation in space, saw the achievement of the two-year anniversary of tended operations on the ISS, and exhibited an incredibly high level of skill and professionalism during the demanding mission. The Expedition 5 crew members are most highly deserving of the Komarov Diploma.

U.S.A.
Nomination for the Federation Aeronautique Internationale
Korolev Diploma

Nominees: **The Crew of STS-109**

CDR Scott D. Altman, USN	Commander
LTC Duane G. Carey, USAF	Pilot
Dr. John M. Grunsfeld	Mission Specialist 1
LTC Nancy J. Currie, Ph.D., USA	Mission Specialist 2
Dr. Richard M. Linnehan	Mission Specialist 3
Dr. James H. Newman	Mission Specialist 4
Dr. Michael J. Massimino	Mission Specialist 5

Affiliation: The crew includes seven NASA astronauts.

Proposed Citation: For the completion of the fourth successful servicing and upgrade mission to the Hubble Space Telescope (HST).

The crew of STS-109 launched on March 1, 2002, aboard the Space Shuttle Columbia and returned to Earth on March 12, 2002. The primary science objectives of this mission involved upgrading Hubble's imaging resolution, increasing the telescope's power availability through installation of new generation solar arrays and an improved power control unit (PCU).

Following launch in Columbia, commander Scott Altman and pilot Duane Carey flew a flawless rendezvous with HST. Flight engineer and primary remote manipulator system (RMS) operator Nancy Currie then flew the Shuttle's robotic arm to a perfect grapple and capture of HST placing it in Columbia's payload bay for commencement of extravehicular activity (EVA) operations.

During five consecutive EVA's, John Grunsfeld (EV1), Rick Linnehan (EV2), Jim Newman (EV3), and Mike Massimino (EV4) replaced and upgraded key instrumentation on HST in tandem with Columbia's intravehicular activity crew performing RMS and Photo/TV operations in support of the ongoing EVA's.

Installation of the Advanced Camera for Surveys (ACS) was the major scientific upgrade to HST for this servicing mission and has dramatically increased Hubble's ability to see deeper into our universe. The installation of the experimental Near Infrared Camera and Multi-Object Spectrometer Cryo Cooler has restored HST's infrared capability while smaller, sturdier, more efficient solar arrays and an improved PCU now provides more power and allow multiple scientific instruments to operate concurrently.

Following the five EVA's, the entire crew performed efficiently and skillfully to deploy HST with Mike Massimino and Nancy Currie alternating on RMS operations. Scott Altman and Duane Carey then executed the separation maneuvers that guided Columbia safely away from HST followed later by reentry and a flawless night landing at KSC.

The Hubble Space Telescope is arguably the most scientifically prolific instrument ever created by humankind. It continues its mission imaging deep space due to the commitment of NASA and its affiliated HST science centers. The crew of STS-109 is part of this family and truly deserves the recognition of the Korolev Diploma.