FEDERATION AERONAUTIQUE INTERNATIONALE

FAI ASTRONAUTIC RECORDS COMMISSION (ICARE)

MEETING HELD AT THE FAI HEADQUARTERS
24 AVENUE MON REPOS, 1005 LAUSANNE, SWITZERLAND
FRIDAY 19 APRIL 2002

M I N U T E S

Dr Sanz Fernandez de Cordoba	President
Mr Christian Marchal	France, Technical Expert
Mr Antonio Castellani	Italy
Dr. John Miles	UK
Mr Michael Collins	USA

In Attendance :

Mr Wolfgang Weinreich	FAI President
Mr Max Bishop	FAI Secretary General
Mr Thierry Montigneaux	FAI Asst Secretary General
Mr. Jean-Marc Badan	FAI Promotion Manager

Apologies :

Mr Nikolay Bodin	Russia, Vice President
Dr Federico Casal	Switzerland
Col. Bedel	Honorary President

Proxies:
Russia to the USA

1 WELCOME BY THE PRESIDENT AND ROLL-CALL

The President welcome all delegates to the meeting of ICARE, and noted with satisfaction the presence of Dr. Miles (UK) after several years of the UK not being represented at ICARE meetings.

2 APPROVAL OF THE MINUTES OF THE LAST MEETING (27 April 2001)

The minutes of the previous meeting were approved as presented.

3 FAI GENERAL CONFERENCE

a. The ICARE President presented his report to the Montreux FAI General Conference, October 2001 (***Annex 1***). He also reported on the following FAI developments:

- The World Air Games had taken place in Spain in June 2001
- The FAI President and Secretary General met in Moscow in early July 2001 with representatives of the Aero Club of Russia and the various air sports groups. This meeting allowed to solve the problem of the Russian representation to FAI, and the subsequent transfer of that representation from the Aero Club of Russia to the Federation of Aeronautical Sports of Russia. The representation of Russia in ICARE remains under the authority of the Federation of Cosmonautics of Russia.
- During their stay in Moscow, the FAI President and Secretary General had the opportunity to meet with the recipient of the FAI Gold Space Medal (Yuri Koptev) and cosmonaut Sergei Krikalev, recipient of Yuiri Gagarin Gold Medal and invited them to the FAI General Conference. Sergei Krikaliev attended the FAI General Conference, during which he received his award and addressed the Conference.

4 ASTRONAUTICS ACTIVITIES AND PROJECTS

a. Reports by Delegates from Member countries

France: Mr Marchal reported as attached (***Annex 2***). The main space European event of the year 2001 was the Edinborough Agreement which presents four main advantages from the point of view of France:

- The “Ariane 5 plus” programme will allow to improve the performance of the launcher to 10 tons of payload
- The development of the Galileo navigation system, and the decision of ESA to finance it to a level of 547 millions Euros.
- The decision to finance the Global Monitoring for Environment and Security initiative.
- The one billion euros budget decided for the European research programme ARTES.

The CNES agency has launched eight rockets Ariane 4 and 5 in the year 2001.

Italy: Mr Castellani reported that the Italian space activity in the past year had been conducted within the framework of the cooperation between NASA and the European Space Agency. An Italian (ESA) astronaut had flown as mission specialist in the Space Shuttle. Italy is a partner in the Galileo programme, the European Satellite Navigation System. Alenia Spazio has been responsible for the assembly, integration and testing of all 72 satellites of the Globalstart programme.

Spain: The ICARE President reported that Spain continued to participate in ESA.

UK: Dr. Miles reported (***Annex 3***). The UK governmental space policy views the cost of conducting research on manned platforms as too high and has three objectives : scientific excellence, commercial profitability and effective achievement of social objectives. The UK private sector is increasingly interested in sub-orbital manned space flight and is involved in building hardware.

USA: Mr. Collins reported as attached on the six missions flown during the year 2001 (***Annex 4***). All these missions had concentrated on assembling the International Space Station. He explained that budget constraints currently limit the prospect of expanding the ISS crew.

Note concerning Germany: the FAI President agreed to investigate getting a German delegate to attend future ICARE meetings

b. X Prize Project

Delegates discussed the latest progress on the X-Prize project:

- Dr. Miles advised that the three UK projects are progressing, with the most advanced one anticipating a first attempt in the year 2003.
- Delegates agreed that one of the main problem to overcome to control X-Prize flights will be to determine the type of equipment to use to certify the performance.
- Delegates tasked the FAI Office with compiling a list of existing and past K-1 world records, to help them in their work
- Dr Sanz Fernandez de Cordoba agreed to prepare a set of proposals for new types of records that could be linked to the X-Prize project, and circulate a document to delegates by early may. This document will include proposals relating to a new “shortest time between 2 flights of a reusable vehicle” record. Mr. Marchal will be invited to comment on the suitability of the proposal from a judging point of view.

(Post meeting note: the document prepared by Dr Sanz Fernandez de Cordoba is included with these minutes as annex 5)

5 FAI SPORTING CODE – SECTION 8 (ASTRONAUTICS)

a. Absolute World Records

Mr. Montigneaux advised delegates of the problem presented by the current wording of chapter 3 of Section 8 which does not explicitely mention whether the records that fall under this chapter are to be considered absolute records or not. As a consequence, the FAI Office is unsure on whether records set under chapter 3 qualify for the FAI de la Vaulx medal or not.

Dr Sanz Fernandez de Cordoba clarified his understanding that the wording was changed some years ago at the request of the FAI Secretariat. Mr. Montigneaux explained that the FAI Secretariat does not see any reason which would prevent having absolute space records, and had no knowledge of the background behind such a request.

Delegates agreed to formally rename Chapter 3 “Absolute Space records” and add to the introductory note the following text :”*…and the best performance will be called ‘absolute record’* “.

b. New record categories proposed by “X-Prize” organisation

See item 4.b above.

c. 5.2.1.4: need to specify which axes are used for measurement, geocentric axes rotating with the earth or fixed geocentric axes

Mr. Marchal recommended to use the axes which rotate with the earth. Dr Sanz Fernandez de Cordoba agreed to work on proposing a formal wording for updating paragraph 5.2.1.4.

6 PROPOSALS FOR FAI AWARDS

ICARE approved the following awards:

a. **Komarov Diploma** : Crew of STS–98 (ISS 5A) and STS-104

b. **Yuri Gagarin Gold Medal** : International Space Station Expedition Two crew. (Note: ICARE agreed to give one copy of the medal to each member of the 3 man crew, it being understood that this is a unique award to three people, since current By-Law 12.9.2.2 allows this medal to be awarded to a crew.)

c. **FAI Gold Space Medal**: Delegates discussed the problem presented by the nomination for this award of International Space Station Expedition Three crew. The FAI By-Law 12.9 specifies that one medal only should be awarded each year. This has always been interpreted to mean “one medal to one individual”. However the wording does not explicitely deal with the case of crews.
Delegates did not take any decision on formally proposing a clarification or change of By-law 12.9, and the US delegate agreed to withdraw their nomination.

Consequently, having no standing nominations, ICARE decided not to award the "FAI Gold Space Medal" this year.

The US delegate then presented on behalf of Russia a proposal that the crew originally proposed for the Gold Space Medal be nominated for a second Gagarin Gold Medal. ICARE supported this request which is in accordance with the FAI By-Laws, and agreed to award a second Yuiri Gagarin Gold Medal to International Space Station Expedition Three crew. (Note: here again ICARE agreed to give one copy of the medal to each member of the 3 man crew, it being understood that this is a unique award to three people, since current By-Law 12.9.2.2 allows this medal to be awarded to a crew.)

7 INTERNATIONAL ASTRONAUTIC FEDERATION

Delegates present reported on the 2001 IAF Congress (Rio De Janeiro). Attached is the report sent by the ICARE President for the IAF General Assembly. This report is included in the minutes of the IAF General Assembly.
ICARE decided to appoint Dr Sanz Fernandez de Cordoba as official representative to the 2002 IAF Congress.
The US delegate agreed to send information to ICARE delegates about the next World Space Conference, due to be held in October 2002.

8 ICARE HOMEPAGE ON INTERNET WEB-SITE

Mr. Montigneaux reported that the following items relating to the update of the ICARE web page were on his to-do list

List of significant historical events in space.
Full list of historical world space records.
Links to NASA, Russian Space Agency, ESA and other suitable websites. Delegates are requested to inform FAI HQ of links they consider interesting and suitable.

9 PRESENT WORLD RECORDS - REPORT

Mr. Marchal reported that one new World Record had been ratified since the last meeting, for “Duration of Flight of Spaceships While Linked”. The record was claimed for STS-102 and ISS 5A.1 and the performance is 8 days 21 hours 53 minutes and 25 seconds.

10 ANY OTHER BUSINESS

Dr. Miles asked that ICARE consider clarifying the awarding procedure for the FAI Gold Space Medal, following the discussion that took place under item 6.c
The US delegate spoke in favour of the current wording, and the ICARE president suggested to keep the wording in parallel with that of the requirements for the FAI Gold Air Medal.
ICARE decided to take no action.

11 ELECTIONS

The following were re-elected :

President : Dr Sanz Fernandez de Cordoba
Vice President : Mr Nikolay Bodin

12 DATE AND PLACE OF NEXT ICARE MEETING

It was agreed that the next meeting would be held on in Lausanne on Friday 25 April 2003

END

ANNEX 1

REPORT FROM ICARE PRESIDENT
94th FAI General Conference, Montreux, Switzerland, October 2001

1.- General Activities of ICARE Committee 2000/2001

The ICARE Committee held its annual meeting on April 27, 2001, at the FAI Headquarters in Lausanne, Switzerland.

The meeting was headed by two significant events. The first was the successful de-orbiting of the Russian MIR Station, and the second the celebration of the 40th. Anniversary of the first manned orbital flight, the flight of Cosmonaut Yuri Gagarin.

In relation to the MIR, ICARE decided officially to recognise the time of 5510 days, 8 hours, 31 minutes, 50 seconds as the total flight time of the Mir Space Station (Russia), starting from launch of the first component vehicle (19/02/1986 at 22:35:23 UTC) to impact of Mir in the Pacific after the de-orbit manoeuvre (23/03/2001 at 07:00:13 UTC). Mr Bodin, Russia Delegate and Vice President of ICARE, reported that the MIR was visited during its long life by a total of 104 different Cosmonauts and Astronauts, of which 42 were Russian cosmonauts, and 62 were from a range of other countries. Unfortunately, there are no recognised records at present for such remarkable achievements (see below paragraph 3), but recognising its importance, ICARE decided as an interim measure to create a list of historically remarkable space flight feats (for display on Internet).

In connection with the 40th anniversary of the first manned space flight, carried out by the Russian cosmonaut Yuri Gagarin, the Russia Delegate and Vice President of ICARE kindly presented the "Star of Blue Planet" medal of the Russian Space Agency to the ICARE President for his contribution to the promotion of Russian space exploration's world achievements.

2.- X Prize

As reported to this Conference last year, some private promoters based in St. Louis, Mo, USA, have created the X-Prize, "a $10 million prize to jump start the space tourism industry … [It] will be awarded to the first private spaceship capable of lifting three humans to a sub-orbital altitude of 100 km on two consecutive flights within two weeks".

The promoters contacted FAI some time ago, and ICARE has been advising them in several grounds. Finally, in May 2001, a Memorandum of Agreement (MOA) has been signed between FAI and the X Prize Foundation. Under this agreement, FAI undertakes basically to send a team of Official Observers to monitor and evaluate each official launch, as well as taking the lead in providing input to the Judging Committee in the part of the rules that refer to re-usability of the vehicles. For the latest case, ICARE is working on introducing new FAI world space record categories for re-usable vehicles, a difficult matter for space ships. The MOA is of course available to any other Commission that may be interested.

It is to be remarked that ICARE, in 1999, reintroduced the records for suborbital flights, partially in attention to the X Prize. The records had been deleted in the mid 80's, due to the apparent lack of interest in such type of flights. Up to then, they had only been flown by the US in the early sixties, both with spacecraft and special aerospace vehicles (the X15). Since the rules for those suborbital flights have been reintroduced in the same terms they existed, the US records of the 60's have been considered as standing by ICARE, and will have to be beaten by new contenders.

3.- Other points of interest

The achievements of MIR Station were the occasion of a long debate in the Commission. The Vice President, Delegate from Russia, proposed interpreting the Sporting Code to allow a record to be claimed for the MIR space Station, stressing the need for FAI to record all the most significant achievements in space flight, whether these were technical or human.

The ICARE President, while recognising with all other delegates that MIR achievements were amazing and deserve an important part in the history of Astronautics (see paragraph 1 above), had to stress that ALL records in the current code were for people who flew in space. Perhaps there was a need for a new category to cover technical achievements, but this did not yet exist and could not be invented and made retroactive. The Vice President agreed to consider, and possibly to make a proposal next year, for a new chapter in the Sporting Code covering “technical records”. In case this type of proposal finds its way in ICARE, it will probably need to be submitted to the next year General Assembly, since it may affect the General Section of the rules.

Dr. S. Sanz Fernández de Córdoba

ANNEX 2

French space activities. Year 2001

A short report.

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Even if exists a French specificity, most studies and works are now shared by several nations, especially inside Europe, and it is difficult to give its part to each nation.

The main space European event of the Year 2001 is the Edinborough agreement of November 15.

From the French point of view that agreement has four main advantages.

A) About the Ariane launcher : the program "Ariane 5 plus" will allow to improve the performances of the launcher (10 tons of payload per launch as soon as July 2002) and will egalize the conditions of the concurrence of the space lauching center of Kourou, against the American launchers that have almost no charge on the American military launching centers.

B) About the navigation system Galileo.
All Europe will beneifit from a navigation system that will be independant from the American GPS.
The developpement of Galileo will require one billion euros and the European Space Agency has already proposed 547 millions Euros of its own budget. The remainder will be given by the countries of the European Union.

C) About the GMES initiative (Global Monitoring for Environnement and Security).
83 millions euros have been decided for this essential project in the management of natural ressources, the protection of environnement and the prevision of natural or industrial disasters.

D) Finally one billion euros have been decided for the European research program ARTES in the domain of satellite telecommunications.

The French National Space Agency CNES (Centre National d'Etudes Spatiales) has launched eight rockets Ariane 4 and 5 in the year 2001, all of them from the Kourou Space Center. These rockets have put twelve satellites in space, but the launch of July 12 was not a full success and its two satellites, Artemis and B-Sat 2b, has reached a lower orbit than the expected one.

Let us notice large progress in Earth observation with many new possibilities either optic or radar or infrared. The Envisat is an accurate altimetric satellite of the European Space Agency that will be very useful for the protection of the environnement and the detection of potential hazard. It has been launched from Kourou February 28, 2002 on a circular orbit at 800 km altitude.

Scientific satellites and experiments are numerous. Let us only notice the French participation is the Integral observatory (Gamma rays, launch in 2002), in the satellite Galex (UV observatory), in the satellites First and Planck-Surveyor (Infrared and submillimeter observations at the Sun-Earth L2 point, launch in 2007).

For the exploration of the solar system, let us notice the participation to the Mars return sample mission (Mars exploration), to the Rosetta mission (exploration of the comet Wirtanen) and to the Beagle probe.

In fundamental Physics the Microscope mission has received the agreement of the European Space Agency (and the corresponding money...). This extremely accurate verification of the Equivalence Principle will also allow to qualify the new generation of drag-free systems and will improve the map of the Earth gravitational potential.

Let us also notice in fundamental Physics the Aces project (General Relativity, Pharao atomic clock under microgravity conditions), the Lisa project (Gravitational waves) and the Ams project (Alpha Magnetic Spectrometer : Astrophysics and high energy Physics), projects in which the French participation is smaller.

We must not forget the successful launch (December 7, 2001) of the French-American satellite Jason-1 of observation of the oceans. It will be the successor of the famous Topex-Poseidon and its own successor, the satellite Jason-2, that will be launched in 2005, is already under preparation.

Let us close that list with some studies that are not really space studies, but that are closely related to space.

In ONERA (French National Office for Aerospace Studies and Researches) the department of active and adaptative optics have helped to the construction of the NAOS system (Nasmyth Adaptative Optics System). This system will probably revolutionize the astronomical observations and is already under test in the European VLT (Very Large Telescope).

The progress of interferometric observation lead to the hope of direct detection of extra-solar planets especially if space interferometric observation become easily available.

Finally the mostly French-American study of asteroids with the ISO satellite (research IDAS : ISO Deep Asteroid Search) reveals much more asteroids than previously believed : between one and two millions 'space rocks' larger than one kilometer ! Fortunately most of them are in the asteroid belt between the orbits of Mars and Jupiter...

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ANNEX 3

REPORT FROM THE UK DELEGATE

Mr. President, members of ICARE, first of all let me say that it is both a privilege and an honour for me to be seated among such a distinguished group of people.

I will take this opportunity to acknowledge the support I received from the Royal Aero Club in the UK.

For the time being, the UK Government's policy on manned space flight is quite clear.

In October last year, Lord sainsbury, who is Parliamentary Under-Secretary of State for Space, and among other things, he is also responsible for the British National Space Centre, said (and I quote) *****

> ***"The view is that the cost of conducting research on manned space platforms is simply too high and that the potential benefits have not been demonstrated".***

He goes on to say

> ***"… UK space policy has three clear objectives. They are scientific excellence, commercial profitability and effective achievement of social objectives".***

In the UK private sector, however, there is a growing interest in sub-orbital manned space flight.

Teams are actively engaged in the design and development of flight hardware in pursuit of the X-Prize and proof of concept vehicles have already flown successfully.

Once could easily argue that these projects are neither at odds with UK Government Policy nor the spirit of Air Sports.

***** Foundation for Science and Technology, Royal Society, 17th October 2001. Speech given by Lord Sainsbury of Turville, *"Using Space for the Public Good"*

ANNEX 5 - proposal for the introduction of new records on reusable spaceships

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