FAI Astronautic Records Commission (ICARE)

2024 Plenary Meeting Minutes

20 May 2024 (online meeting via zoom)

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1 WELCOME BY THE PRESIDENT

The President welcomed all attendees, delegates, experts and FAI observers.

2 ROLL-CALL

Present

- Scott NEUMANN– ICARE President
- Henrik ÅKERSTEDT (SWE) –ICARE Vice President, Delegate
- Nicolas BÉREND (FRA) – Technical expert
- Jean-Francois CLERVOY (FRA) – Delegate
- Luca URBANI (ITA) – Delegate
- Samantha MAGILL (USA) – Delegate
- Narit PIDOKRAIT (SWE) – Alternate Delegate
- Ché BOLDEN– Observer/ICARE Expert Panel
- Jonathan MCDOWELL - Observer/ICARE Expert Panel
- David MONKS – FAI President
- Agust GUDMUNSSON – FAI Finance Director
- Antonis PAPADOPOULOS – CASI/CIAM President
- Markus HAGGENEY – FAI Secretary General
- Kamila VOKOUN HAJKOVA – FAI Members and Commissions Relations Manager
- Visa-Matti LEINIKKI - FAI IT Manager

3 DECLARATION OF CONFLICTS OF INTEREST

No conflicts of interest were declared.

4 APPROVAL OF THE MINUTES OF THE LAST MEETING

Annex 1 - FAI ICARE 2023 Plenary– Meeting Minutes_v1.

No changes were requested for the previous plenary minutes.

Approved.

5 FAI ACTIVITIES

Annex 2 - 2024-FAI-ICARE-plenary -report-SG-v1 (2024-May-20)

The FAI report was presented by the FAI Secretary General, Markus HAGGENEY, and a written summary is provided in Annex 2.

6 ASTRONAUTICS ACTIVITIES AND PROJECTS

6.1 NORDICS

A second Swedish astronaut, Marcus Wandt launched earlier in the year for a three week mission aboard the ISS.

A few suborbital launches were conducted from Spaceport Esrange and the first orbital launch from the complex may happen later in 2024.

Norway has been launching sounding rockets from their orbital-class space port.

A German orbital-class rocket may launch later this year from the space port in Scotland.

Denmark's first astronaut Andreas Morgansen recently completed his second mission and was the first Danish commander of the ISS.

6.2 ESA/FRA

The new class of ESA astronauts (5 active, 11 reserve and one para-astronaut) are conducting training activities.

Parabolic, "zero-g" flights have been quite active in France.Valer Villa Day.

6.3 ITA

Italian astronaut Colonel Walter Villadei made a suborbital flight with Virgin Galactic and then was the pilot on the private Axiom-3 mission to the ISS.

6.4 USA

Steady increase in number of launches over the past few years. Last year there was a record number of 109 launches with 98 from SpaceX.

Recently graduated the latest NASA astronaut class. Will let them know about FAI and record setting opportunities.

Crew Dragon regularly visits ISS, crewed Boeing Starliner test flight possibly later this year.

Artemis 2 launch date has been moved to 2025. The crew includes a Canadian astronaut.

The Artimis Accords now has 36 countries.

A US commercial company landed a spacecraft at the Lunar South Pole – mostly successfully. Several NASA instruments are onboard.

SpaceX Starship had the third test flight. The also launch 2 Crew Dragons to the ISS in 2023 (11 in total so far).

The Osirus Rex asteroid sample and return mission made a successful landing.

The Boeing Starliner may have its first crewed flight in 2024

7 INTERNATIONAL ASTRONAUTIC FEDERATION

Mr. BEREND was not able to personally attend the International Astronautic Federation conference this year which was held in early October 2023 in Baku Azerbaijan. There was a slight reduction in participation form Western countries and the number of abstracts and papers presented. There was increased participation from non-Western countries, particularly China, and overall seemed to be a successfully conference with more exhibitions and side events in addition to the technical papers. The IAF World Space Award was awarded to Elon Musk, who participated remotely in the plenary events.

Mr. BEREND was nominated to be the ICARE representative to the next IAF conference which will be held in Milan Italy. Mr. BEREND is also a member of the program committee for the conference which has already received over 7000 abstracts.

8 NEW ASTRONAUTICAL RECORDS - REPORT

None filed.

9 PROPOSAL FOR NEW ICARE LOGO

The current ICARE logo was previously discussed at the last plenary. Since it depicts a specific (retired) spacecraft, it is not a general logo representing all types of spaceflight. Mr. AKERSTEDT presented a new version of the logo featuring a globe with stylized spacecraft flight tracks and a generic astronaut helmet. This designed had been circulated among the delegates and comments incorporated into the final design. A motion to accept the design as the new ICARE logo was made and seconded.

The motion passed unanimously, and the new logo was approved.

New ICARE LOGO as of 2024 Plenary Meeting

10 FAI SPORTING CODE

Annex 3 FAI ICARE Plenary Meeting- Sporting code presentation. Neumann

Mr. Neumann reported on the ICARE Expert Panel sessions held on 28 September and 4 October 2023. The ICARE Expert Panel was composed of a diverse group of spaceflight experts including:

- Dr George Nield
- Col George Zamka
- Jared Issacman
- Laura Montgomery
- Jeff Greason
- Col Che Bolden
- Dr Jonathan McDowell
- Nicolas Berend

Panel Moderators: Scott Neumann, Henrik Akerstedt

The ICARE Expert Panel discussed key questions of spaceflight developments and activities expected in the next fifty (50) years and the implications for the Astronautics Sporting Code (Section 8). The group discussed types of records, mission domains, measures of performance and the expected milestones of crewed and uncrewed spaceflight.

Mr. Neumann presented a proposed framework of the new Section 8 highlighting differences from the existing astronautics sporting code. Some of the changes included introducing records for uncrewed spacecraft, adding propulsion groups and adding a new mission domain for deep space missions.

The delegates confirmed by a unanimous vote of confidence that the proposed framework was the correct path to guide drafting of the new astronautics sporting code.

11 DISCUSSION OF MODERNIZED DEFINITION OF KARMAN LINE

Annex 4 FAI ICARE Plenary Meeting- Karman Line presentation. Berend

Mr. Berend made a detailed presentation of the Karman line. As originally proposed by Theodore von Kármán in the late 1950s, the “line” was a region from 91 – 122 km (300,000 – 400,000 ft) which represented the theoretical altitude limit for aircraft or the “boundary of space”. Mr. Berend’s work provided a more quantitative approach and introduced the idea of a “maximum equilibrium velocity altitude” which takes into account a lift curve (which depends on the value of the lifting parameter) and orbital velocity (which depends on vehicle altitude). The altitude where the maximum value for

equilibrium velocity occurs provide the value of the Karman line. The approach outlined by Mr. Berend provides a clear physical meaning for the Karman line which is consistent with the original ideas expressed by von Karman. In short, as altitude is increased and atmospheric density decreases an aircraft must go faster to produce lift. At some altitude, the equilibrium velocity reaches a maximum, then the effect of centrifugal force prevails over lift. In order to go higher, it must decrease speed and its behavior becomes that of a spacecraft (orbital speed decreases with increasing altitude). The value of the Karman Line calculated in this way is highly depended on the lifting parameter.

Discussion followed Mr Berend's presentation. A consensus emerged that there is value in maintaining the value of the Karman Line at 100 km for practical reasons and continuity with the historical value. It was also recognized that the Karman Line is a convention (like the meter). Depending on the selection of the lift parameter a range of altitude could be selected. Since no altitude was more or less valid than any other, the group decided to select the value for the lift parameter which would result in 100 km for the Karman line. Mr. Clervoy concurred with keeping the current value for the Karman Line and also introduced the idea of a Karman "box" and describing how the physical phenomenon of equivalent velocity could occur at a range of altitudes.

A motion was made to retain the 100 km value for the Karman Line and update the Karman Line paper on the FAI website with the refined definition as presented by Mr. Berend and include in the discussion the idea that there is a range of potential altitude based on assumption for the equilibrium velocity.

The motion passed with none opposed.

Mr. Berend was asked and agreed to update the FAI Karman Line paper. The Karman Line definition will also be included in the new Section 8 sporting code in development.

12 ICARE 'MILIARIUM AD ASTRA GRAND CHALLENGES

Annex 5 FAI ICARE Plenary Meeting -Grand Challenges Sporting code, Statute and By-law changes. Neumann

Mr. Neumann discussed the proposal for the Miliarium Ad Astra ("Milestones to the Stars") Grand Challenges and shared a new chapter of Section 8 of the Sporting Code that would implement the Grand Challenges along with the required FAI Statute and By Law changes. The Miliarium Ad Astra Grand Challenges are a set of specific defined events designed to incentivize and recognize significant technical accomplishments and milestone human spaceflight events. These accomplishments represent singular events which happen once, cannot be improved upon, and mark a significant milestone in astronautics. Successful accomplishment of a Grand Challenge would be recognized with the FAI Space Gold Medal for crewed missions and with a new Robert H. Goddard Gold Medal for uncrewed missions. Five challenges are described as part of the initial sporting code proposal but more challenges are planned an may be added at future plenary meetings. Statute changes are necessary to implement the challenges so that the FAI Gold Space Medal is awarded without further approval after a Grand Challenge is validated. FAI By Law changes are also needed to institute the Goddard Medal. (The Goddard Medal would also be available to recognize uncrewed spacecraft technical accomplishments,)

Discussion followed the presentation during which Mr. Urbani suggested that the "Astronautic Records Commission" be changed so it is more inclusive of astronautic activities and not just records.

A motion was made to provisionally accept the draft Sporting Code proposal for Miliarium Ad Astra Grand Challenges and to forward the proposed Statute and By Law changes to the FAI Secretariat for action.

The motion passed unanimously.

13 CONSIDERATION OF FAI AWARDS NOMINATIONS

Mr. Akerstedt nominated astronaut Marcus Vant for the Komarov Diploma. During discussion it was determined that the accomplishments included in the nomination did not occur “in the previous year” but were more recent. Mr. Monks clarified the meaning of “in the previous year’ as occurring in the 12 months prior to the most recent General Conference. Since the accomplishments were not in the previous year, the nomination was not considered but referred back to Mr. Akerstedt for consideration at the next plenary.

14 ANY OTHER BUSINESS

No other business was raised.

15 ELECTIONS

Mr Neumann was nominated as the only candidate for President. The nomination was unanimously accepted by open ballot.

Mr Åkerstedt was nominated as the only candidate for Vice-President and secretary. The nomination was unanimously accepted by open ballot.

16 DATE AND PLACE OF NEXT ICARE MEETING

Plenary meeting in Q1-2025, TBD.

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FAI - Fédération Aéronautique Internationale
Avenue de Rhodanie 54
CH-1007 Lausanne
Switzerland
Tel: +41 21 345 10 70
Fax: +41 21 345 10 77
www.fai.org
info@fai.org