CASI MEETING 2012
ANNEX 10

From: President, FAI Commission on Airspace and Navigation Systems (CANS)
To: Bureau, FAI General Sporting Commission (CASI)

The following reflects § 8.5 of the minutes of the 2012 CANS Plenary meeting, and concerns the General Section of the Sporting Code. Would you be kind enough to put this item on the agenda for the CASI meeting to be held in Antalya in October. Many thanks.

In § 7.3.1.1 of the General Section, the WGS84 Ellipsoid earth model is mentioned and also an "FAI Sphere". Since the 1990s, ICAO and national Regulatory Authorities have used the WGS84 Ellipsoid for mapping including airspace boundaries, runway centrelines and co-ordinates. All GNSS systems use the Ellipsoid and even Google Earth uses it.

It is proposed that the Sphere be deleted from the General Section, not only because it has no credibility in today's world but also because FAI has a legal obligation to obey local Air Law, which cannot be ensured with respect to airspace using a spherical earth model because airspace is only accurately mapped to the Ellipsoid.

Lars Holmström
CANS President

CANS recommendation that the FAI earth model should be the WGS84 ellipsoid – draft of 7 August 2012 from Ian Strachan, CANS Secretary and Chairman of the IGC GNSS Flight Recorder Approval Committee

Existing GS wording:

GS 7.3.1.1. Distances on the earth's surface. For FAI distance calculations, the earth model used may either be the WGS84 ellipsoid or a sphere of radius 6371 km exactly. For accurate measurement and calculation of distance, Air Sport Commissions shall choose which model is to be used in their area of activity. The WGS84 ellipsoid is very close to the real shape of the earth, the FAI sphere is an approximation. For further details on the WGS84 ellipsoid and the FAI Sphere, see the Glossary. A short PC-based distance calculation program for both earth models is available by email from the FAI Secretariat. (AL11)

Proposed update 2012

GS 7.3.1.1 Measurements on the earth's surface. For accurate distance calculations and the assessment of proximity to airspace, the earth model for FAI purposes is the WGS84 ellipsoid. For more details, see GS 5.2.2.3 for FAI obligations on airspace and the Glossary item for WGS84.

GS GLOSSARY - Suggested update 2012

Geodetic Datum. Delete. Although what it says is accurate, if FAI universally adopts the WGS84 system it is confusing to mention over 200 different ellipsoidal earth models used in older paper maps. Where official aeronautical maps with airspace boundaries are now produced, in accordance with ICAO rules these use WGS84.

Geodesic - Suggested update 2012: The term "geodesic" comes from geodesy, the measurement of the size and shape of the Earth, and refers to the shortest distance between two points on the surface of an ellipsoidal world model. Using lat/longs based on the same geodetic reference system, the distance of the geodesic between them can be calculated. For accurate distance calculations and the assessment of proximity to airspace, the earth model for FAI purposes is the WGS84 ellipsoid (GS 7.3.1.1). A short PC-based calculation program for the length of geodesics on the surface of the WGS84 ellipsoid is available at: www.fai.org/how-to-set-a-record/world-distance-calculator

WGS84 - Suggested update 2012:. In 1989 ICAO adopted the World Geodetic System 1984 as the standard reference system for future international air navigation. This was so that, when the GPS system came into use in Commercial Air Transport, there would be a common world standard without regional variations. It has an ellipsoidal earth model (the WGS84 ellipsoid) with an equatorial radius of 6378,1370 km and a polar radius of 6356,7523 km, centred on the earth's centre of mass and orientated to the spin axis. Since the 1980s refinements have been made to the overall WGS84 system but these have been on details such as gravitational models that do not affect the dimensions of the ellipsoid used for mapping. WGS84 is now used by National Aviation Authorities for defining the boundaries of restricted and other airspace, the positions of airport features such as runway centrelines, and its earth model is used by other worldwide GNSS systems such as the European Galileo, Russian GLONASS and Beidou 2 from the People's Republic of China. References may also be found to an International Terrestrial Reference Frame (ITRF) but the difference between WGS84 and ITRF is only a few centimetres. See GS 7.3.1.1 and also this Glossary under "Geodesic". A short calculation program for distances on the surface of the WGS84 ellipsoid is available at: www.fai.org/how-to-set-a-record/world-distance-calculator

Note 1, not for the GS: Some of the above wording is taken from the following ICAO announcement: "The Council of the International Civil Aviation Organization on 3 March 1989, approved the adoption of the World Geodetic System1984 (WGS 84) as the standard geodetic reference system for future navigation with respect to international civil aviation."

Note 2: The FAI web page for the calculation program will need to be changed to (1) remove the Sphere and (2) adjust the notes accordingly. Action: FAI I.T. manager

ALTERNATIVE PROPOSAL (Buzz Bennett and Gunter Bertram)

GS 7.3.1.1. Measurements on the earth's surface. The earth model for FAI purposes is the WGS84 ellipsoid.

GS 4.1.2 on Control of FAI Sporting Events, Badges and Records. Suggest add: "See 5.2.2.3 on Unsporting Behaviour".

Reason: GS 5.2.2.3 is in the section about Championships. It should be made clear that for other performances under FAI rules (that is, GS 4.1.2), similar criteria apply. Referring more directly to compliance with Air Law and Airspace restrictions could lead to difficulties and disputes over interpretation, so the cross-reference to 5.2.2.3 is intended as a low-profile way of declaring a common standard for these matters both in and out of Championships.