International Civil Aviation Organization
Organisation de l'aviation civile internationale
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Международная организация гражданской авиации
منظمة الطيران المدني الدولي
国际民用航空组织

LT 2/6A.15 SA0747 11 September 2003

Subject: **WGS-84 Seminar/Workshop**
(Rio de Janeiro, Brazil, 01 to 05 December 2003)

Required Action: **Take note and confirm participation by 17 October 2003**

Sir,

I have the honour to address you this letter to refer to this Office's Meeting Programme for 2003, duly published on ICAO South American Office's Web page (www.lima.icao.int). In such sense, I am pleased to inform you on the convening of the ***WGS-84 Seminar/Workshop***, to be held from 01 to 05 December 2003 in Rio de Janeiro, Brazil.

This Seminar/Workshop will be held as part of the SAM-SIP WGS-84 Special Implementation Project, and will be supported as well by the RLA/98/003 Technical Cooperation Regional Project. The main objectives of this event will be the practical application of equipment, computer programmes and other technical procedures for the effective positioning and field surveys of the geographic and geodesic data under the WGS-84 reference system, as well as to analyse the global reaches of WGS-84 system, and its importance as essential element in direct support of the effective implementation of GNSS Systems in the CAR/SAM Region.

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In consideration of the above mentioned, I am pleased to invite your Administration to actively participate in this event, designing delegates of your State with responsibility and experience in the field of aeronautical cartography, geodesy and mainly in the implementation of the WGS-84 system. On this regard, as this Seminar will be supported in part by RLA/98/003 Regional Project, please be aware that there will be offered two (2) fellowships for each one of the States part of said Project. This possibility will be officially notified as per procedures established for such cases.

Under **Appendix A** of this letter, you will find for your consideration, the Draft Agenda of subjects to be considered during the Seminar/Workshop. You will find attached as well, information paper IP/1 (**Appendix B**), containing general information on the development of the event.

Please be aware that, if possible, part of the documentation and/or presentations for this event, will be opportunely published in this Regional Office's Web page (http://www.lima.icao.int/meetings 2003), from where it can be downloaded.

Likewise, please take into consideration the possibility given to your Administration to actively participate in the deliberations and/or technical presentations of the event In such sense, should you like to present a document on any of the subjects to be treated during this Seminar/Workshop, I would very much appreciate your informing such decision in due time, and in any case, **no later than 30 October 2003**, in order to enable its opportune processing. In such sense, please send an electronic version of the documentation to be presented by your Administration, to this Office's e-mail address (mail@lima.icao.int).

Would very much appreciate receiving your comments on the Draft Agenda for this Seminar/Workshop, as well as the confirmation regarding the participation of your Administration in this event, **by 17 October 2003**.

Being certain that the participation of your technical personnel in this event will highly contribute to reach the objectives foreseen for the development of civil aviation in the SAM, and particularly in the implementation of WGS-84, please accept the assurances of my highest consideration.

(original signed by)

José Miguel Ceppi
Regional Director
South American Office
Lima

INTERNATIONAL CIVIL AVIATION ORGANIZATION

SOUTH AMERICAN OFFICE

Special Implementation Project (SIP) SAM/03- WGS-84

UNDP/ICAO RLA/98/003 Regional Project

WGS-84 SEMINAR/WORKSHOP

Objectives: The Seminar/Workshop will be mainly addressed toward to satisfy the positioning technical requirements, in direct support to the effective implementation of the GNSS, through the provision of:

a) required technical support and orientation for a more ample understanding on the World Geodetic System 1984 (WGS-84), through the practical application on the main technical requirements of this system; and,

b) relevant information on the use of adequate techniques for the precise determination of WGS-84 vertical data, mainly such concerning the publication of geoid undulation referred to the WGS-84 ellipsoid.

Duration: The Seminar/Workshop will have a duration of one (1) week, from 1 to 5 December 2003.

Agenda

1. Practical use of specific geodetic global positioning system (GPS) devices of one and double frequencies, to carry out the survey works. Positioning process using the direct conection with GPS reference stations of the International GPS Service for Geodynamics (IGS network).

2. Practical application of the RINEX files directly used during the GPS geodetic survey works, as well as the establishment and use of data bases having the survey field files in RINEX format.

3. Use of computer devices and specialized softwares (i.e. Geolab, GIPSY-OASIS II (JPL-NASA), GPPS (GPS Post Processing Software) of ASTEC.....) for the post processing calculation of data directly obtained from GPS geodetic survey works; softwares (i.e. GEOTRANS, GEOTOLS.....) for the transformation and/or conversion (i.e. CONSYS-DATA) of the geograhic data from a local geodetic reference, to the WGS-84 geodetic reference system; as well as the use of softwares (i.e. earth gravitational model/EGM-96/NIMA.....) for the determination of geoid data and its relationship with vertical data of the WGS-84 ellipsoid.

Application of technical procedures to verify and validate geographical and geodetical WGS-84 data, to ensure the accuracy, precision and resolution of the WGS-84 information/data.

4. Establishment of Quality Systems (QS), and Quality Assurance Programmes (QA) concerning the WGS-84 electronic data, which are capable to safeguard the integrity level of the electronic data through the cyclic redundancy check (CRC).

5. Application of adequate techniques for the precise determination of WGS-84 geoid undulations

at the international airports.

- Basic concepts on the ellipsoid (local and WGS-84), and the geoid (MSL and gravimetric) models, and its close relationship.
- Concepts on the tri-dimensionality of the WGS-84 geodetic system.
- Concepts on the MSL, orthometric heights, WGS-84 ellipsoid heights, and the WGS-84 geoid undulation.
- Advantages and disadvantages of the different technical application methods used for the determination of data concerning the orthometric heights, WGS-84 ellipsoid heights, as well as the WGS-84 geoid undulation.
- Cautions to be taken into consideration during the field works as well as the post-processing phase to determine the orthometric and the WGS-84 ellipsoid heights.
- Cautions to be taken into consideration on the calculations during the post-processing phase for the determination of the WGS-84 geoid undulation.
- Use of adequate electronic tools in the process and post-process phases, for the determination of the orthometric heights, WGS-84 ellipsoid heights as well as WGS-84 geoid undulation data.
- Validation procedures of the WGS-84 geoid undulation data to be published.
- Methods of quality assurance for the WGS-84 geoid undulation data to be published.

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