



International Civil Aviation Organization

CAR/SAM Regional Planning and Implementation Group (GREPECAS)

**Tenth Meeting of the GREPECAS Aeronautical Information Services Subgroup
(AIS/MAP/SG/10)**

Caracas, Venezuela, 26 February - 02 March 2007

AIS/MAP/SG/10-WP/25

22/02/07

Agenda Item 6: Other Business, within the Terms of Reference of the AIS/MAP/SG

**RECOMMENDATIONS FOR GEODETIC SYSTEM WGS-84 IMPLANTATION IN RELATION
WITH VENEZUELAN EXPERIENCE**

(Presented by Venezuela)

SUMMARY

This Study note recommends the revision of the World Geodetic System Manual (Doc.9674) about transformations between reference local systems and geocentric systems, with base in the Venezuelan experience.

References:

- 9674 Document. World Geodetic System Manual WGS84

1. Introduction

1.1 The datum SIRGAS-REGVEN from geocentric datum WGS84 is made official in Venezuela on March 03rd 1999, according to Republic of Venezuela Official Newspaper no. 36.653.

1.2 Based on scientific researches conducted by the Zulia University, the transformation parameters PATVEN98 were made official, which were recommended by the IGVSB with the purpose of facilitating to the users the transformation between the geodesic and cartographic inventory to new Geodesic System WGS-84.

1.3 During the First International Congress of Geodesy 2002, conducted in Caracas, Petroleums Venezuelan Company (PDVSA) with the Zulia University presented/displayed a technical report about datums transformations that offered a solution to the mathematical problem of the adapted adoption of the transformation parameters concluding that the best mathematical similarity model is MOLOBDENSKY-BADEKAS matrix. The same technical report establish that, of not being able to count on a commercial software of transformation that has supported this matrix, a methodology could be established to calculate new parameters of transformation based in matrices of three or seven parameters, which are specified in the WGS84 World Geodetic System Manual (Doc.9674).

2. Discussion

2.1 In chapter 4, Guide to obtain Coordinates WGS-84, in aside 4.2.1.1 specifies itself that if the transformation parameters are known for different marks of references, is necessary to make a transformation with formulas that appears on aside 4.2.2, being able to use softwares in support to this procedure, like for example, program DATUM.

2.2 It has been demonstrated that the use of the transformation parameters recommended by Instituto Geografico de Venezuela Simón Bolívar for Venezuela with the matrices specified in the WGS84 World Geodetic System Manual (Doc.9674), throws erroneous results that do not satisfy the condensed exigencies of precision in Tables 2-1, 2-2 and 2-5 of Document 9674.

2.3 Researches made by Petroleum of Venezuela Company (PDVSA) have established that the use of transformation parameters with inadequate mathematical models show undesirable mathematical results that, to be applied in the aeronautics, can carry unfortunate consequences.

3. Conclusion

3.1 The methodology specified in Part 4.2.2 of Document 9674m, where the possibility of applying three different methods to transform coordinates is not totally reliable, because the use of transformation parameters must go more in agreed with the better mathematical model according to the contracting State geodesic reality and to make the geodesic transformations with the due consultant's office of the specialists in geodesic investigations of each contracting State, avoiding the illegal use of commercial software.

4. Suggested Action

4.1 It is invited to the Meeting to take note from the proportionate information and to consider the revision of Chapter 4, aside 4.2 of Doc 9674.