



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

SYSTEM WGS84 IMPLANTATION IN VENEZUELA

(Presented by Venezuela)

SUMMARY

This Study note reviews the vertical level WGS84 implantation and requirements (geoidal undulation) in Venezuela.

References:

- Air Navigation Eleventh World-wide Conference.
- 9674 Document: World Geodetic System 1984 Manual.

1. Introduction

1.1 In 1956, The PDA56 datum is adopted in Venezuela like provisional, located in the zone denominated commonly "the Canoe", near the population of "El Tigre", in the Anzoátegui state. It is official in Venezuela during the government of General Marcos Pérez Jiménez and becomes to be the geodesic reference for all the works of civil engineering to great scale, the cartography and the topography. This topocentric datum adopts the ellipsoid of Hayford.

1.2 With the geodesy and satellite positioning systems creation, in association with ellipsoid WGS84 and later the GRS80, in accordance with the Geodesy International Assembly celebrated in Vienna, was necessary to world-wide adopt a compatible datum with navigation GNSS (navigation by satellite), geocentric, with point in the Earth masses center, including the terrestrial atmosphere.

1.3 The International Civil Aviation Organization Council, in his thirteenth session of his 126^o period of sessions celebrated on March 3rd at 1989, approved recommendation 3,2/1 of the fourth meeting of the special Committee on aerial positioning systems of the future (FANS/4) relative to the adoption of world-wide geodesic system 1984 (WGS84) like norm of the geodesic reference system for future navigation. The objective is to implant on uniform form the SARPS based on the WGS84 that appears in annexed the 4, 11, 14 and 15.

1.4 In 2005, both ellipsoids had equal consistency, reason why both can be also defined like the same. As a result of the improvement of these satellite systems and their extensive use in all the areas where geodesy becomes jumbled, such as: terrain orientation, aerial and marine navigation, civil works, cadastre, cartography, etc., Venezuela had to make studies about the adoption of a new compatible geodesic system.

1.5 It is so geodetic system SIRGAS-REGVEN from geocentric datum WGS84 is made official, according to Official Newspaper 36,653 of date March 3rd, 1999.

2. Implementation

2.1 The Venezuelan State, through the Air Traffic Management and Airports Improvement Project (MAGTA), made the production and/or acquisition of:

- Satellite coordinates according to World Geodetic System WGS84 Manual (Doc. 9674), the monumentation (PACS and SACS) of the specified points in this publication in thirty three (33) Venezuelan airports, in digital and analogical format.
- RNAV Procedures for 33 Venezuelan airports, in digital and analogical format..
- Technical qualification to INAC personnel in geodetic surveys with double frequency GPS equipment and total stations under datum WGS84, post process and adjustment..
- Airspace Design and RNAV procedures with the corresponding processes of aeronautical mapped.
- Greater and smaller equipment for the geodetic surveying and the total assembly of a computerized system for RNAV procedures production.
- Agreed Software and licenses with the process.

2.2 The General Mission of the System WGS-84 Implantation Project in Venezuela was:

To publish in Venezuela/AIP, all WGS-84 information/data including all aeronautical charts, airports, airspace and flight information region.

To produce RNAV procedures for arrivals and departures on thirty three (33) airports of Venezuela.

2.3 The Specific Objectives of the process were channeled:

- To produce the satellite coordinates according to the World Geodetic System WGS84 Manual on thirty three (33) airports in Venezuela, in digital and analogical format.
- To publish the heights of the mentioned points previously, using the height system EGM96, conformity to experiences of CAR/SAM region.
- To publish the Geographic data in the AIP/Venezuela under WGS84 datum.
- To execute the monumentation (PACS and SACS) of the specified points in this publication on thirty three (33) airports in Venezuela.
- To design RNAV procedures for arrivals and departures on thirty three (33) Venezuelan airports
- To guarantee the technological transference to airspace planing personal, topographers, geodesists and cartographers.
- To acquire all necessary logistics.

2.4 The Benefits associated to the execution of this Project will allow that the INAC satisfactorily fulfills the requirements demanded by the OACI, in the matter of aerial security, to short, medium and long term, so that the Air Navigation Services can elevate the protection levels in the national scope, taking care the air traffic management in effective way.

2.5 Also, it will guarantee to safeguard within the corresponding airport infrastructure, the life and the goods of the people as opposed to situations that represent threat, vulnerability or risk, of any generating event of damages, as a result of the mutual incompatibility of positioning systems and its later errors of location in the aircraft involved in an air traffic.

2.6 It can attend in quality of support to other competent organisms, in civil works cases and cartography, the listing of the WGS84 positions in the airports facilities.

2.7 In relation to the maintenance plan, it will be made according to the specified thing in the WGS84 Manual. One settles down that it must take place measurements in the established points every five (05) years. An aeronautical law will settle down following the Geography, Cartography and National Cadastre Law, for INAC geodetic patrimony preservation.

3. Conclusion

3.1 The Advantages that Venezuela has received from the Technological Transference in the WGS-84 implementation:

1. Six topography specialist people were trained in geodetic airport surveys according to ICAO Annexed 14, with SLC Associates Company of England.
2. Six people were trainers in RNAV procedures basic level with Dr. Ralph Sexton (EE.UU.).
3. Additionally, two professionals of AIS Division have been sent to complete a RNAV procedures high level design course in Brazil. At the future, INAC will send four employees.

3.2 The technological transference obtained through the training received by the aeronautical technical personnel, and the certification in different levels by the English company SLC ASSOCIATES, as well as the acquisition of the necessary equipment, will allow that Venezuela continues with the geodetic measurements in the rest of the aerodromes at the country, as well as the navigation aids surveys until completing in independent form the total WGS-84 implantation, and even collaborating by means of international cooperation agreements to the geodetic airport surveys in the States within CAR/SAM regions that have not even initiated it or completed.

4. Suggested action

4.1 Venezuelan representing invite to the Meeting to take note from the proportionate information and to consider the offer made by Venezuela in order to collaborate in the advising and execution of the geodetic surveys to those States that they have not completed or initiated works in WGS84 implantation.