

Agenda Item 1: Analysis on the technical requirements of Part VIII (Aeronautical Information Services and Aeronautical Charts) of the CAR/SAM Air Navigation Plan, Vol. I, Basic Plan

1.1 Under this Agenda Item the Meeting made a review on the Part VIII (Aeronautical Information Services and Aeronautical Charts) of the CAR/SAM Air Navigation Plan, Vol. I, Basic Plan (see **Appendix A** to this part of the Report). This allowed delegates not only to provide them with a better knowledge and become familiar with the respective material, but also to facilitate its understanding and thus, its future effective implementation. Based on the considerations made on the matter, the Meeting adopted following Conclusions:

CONCLUSION 1/1 - FAMILIARISATION WITH THE REQUIREMENTS OF PART VIII (AIS/MAP) OF THE CAR/SAM AIR NAVIGATION PLAN

That, in view of the need to become familiar with Part VIII (AIS/MAP) of the CAR/SAM Air Navigation Plan:

- a) the relevant civil aviation administrations download the content of Part VIII (AIS/MAP); Vol. I (Basic Plan) and Vol. II (FASID) of the CAR/SAM Plan from the web page of the ICAO South American Regional Office for its effective application; and
- b) to the extent possible, the ICAO South American Office foster the holding of seminars/workshops aimed at a broader dissemination and understanding of the documentation referred to in the previous paragraph.

CONCLUSION 1/2 - IMPLEMENTATION OF THE TECHNICAL REQUIREMENTS OF PART VIII (AIS/MAP) OF THE CAR/SAM PLAN; VOL. I (BASIC PLAN) AND VOL. II (FASID)

That, in view of the time elapsed since the CAR/SAM/3 RAN meeting, and considering that there are still many AIS/MAP requirements pending full implementation:

- a) the SAM States that have not done so yet, take the necessary action to establish a strategic plan for the effective implementation of all and each of the technical requirements of Part VIII (AIS/MAP) of the CAR/SAM Air Navigation Plan; Vol. I, Basic Plan, and of Part VIII (AIS/MAP) of the CAR/SAM Air Navigation Plan; Vol. II, FASID, and send copy of said plans to the SAM Regional Office as soon as possible; and

- b) the ICAO South American Office, through its regular work programme, renew its efforts to foster any action required to support the respective States in the effective implementation of the AIS/MAP requirements of the CAR/SAM Plan; and do the respective follow up of the strategic plans prepared by the States, in keeping with item a) above.

1.2 After analysing the contents of Part VIII (Aeronautical Information Services and Aeronautical Charts) of the CAR/SAM Air Navigation Plan, Vol. I, Basic Plan, with a view to make a revision of this document to adequate it to the latest technical requirements adopted in ICAO Annexes 4 and 15, after the approval of said Plan, the Meeting considered it convenient to formulate an action to promote a more detailed study to be conducted by the ICAO Regional Offices regarding the need to amend the CAR/SAM Plan. Based on this study, a working paper should be prepared by AIS/MAP/SG Secretariat, for its analysis by said contributory body, in order to adopt the corresponding actions to be presented for its further consideration by GREPECAS. In order make an advance of the proposed task the meeting observed that some changes should be introduced as follows:

- a) Paragraphs 9, 10 and 12, under “Support for the AIS and MAP services”, should be revised in order to adequate its contents to make it specific to what is finally considered as requirement;
- b) Paragraph 15, under “Coordination between AIS and other technical services”, should be modified to refer to “AIS Services”, instead of to “appropriate AIS/MAP personnel”.
- c) Paragraphs 16 to 19 under “Training of AIS and MAP personnel”, should be considered for the “inclusion of AIS training requirements in the FASID CAR/SAM document”
- d) Paragraph 24, in accordance with amendment 32 to Annex 15, should be modified to change de term “should” by “is”. Likewise, at the end of the paragraph, the text “and the aeronautical information documentation” should be added.
- e) Paragraph 59 under “Aeronautical charting programme”, should be revised to “include the radar vectoring chart”, as part of the CAR/SAM Plan requirements.
- f) Item d) of paragraph 68 under “automation in AIS”, should be modified to “available aeronautical communications networks and public networks”. Likewise item i) under same paragraph should be reformulated, mainly to eliminate the text indicating “A State which decides not to automate its AIS”.

In such regard, the meeting adopted following Conclusion:

CONCLUSION 1/3 - PROPOSAL FOR STUDY FOR THE ADEQUATION OF PART VIII (AIS) OF THE CAR/SAM AIR NAVIGATION PLAN

That, with a view to permit a review on the content of Part VIII (AIS) of the CAR/SAM Air Navigation Plan, Vol. I, Basic Plan, in order to adequate same to the latest technical requirements adopted in ICAO Annexes 4 and 15, which were taken after the approval of said document, the ICAO NACC and SAM Regional Offices should conduct a relevant study, in order that the AIS/MAP/SG Secretariat prepares a working paper containing a proposal of amendment to Part VIII (AIS) of the CAR/SAM Air Navigation Plan, Vol. I, Basic Plan, to be presented to the AIS/MAP/SG/9 Meeting, for its further consideration by GREPECAS/13 Meeting.

1.3 Upon considering the aspects related to the implementation of the AIS/MAP requirements contained in ICAO Annexes 4 and 15, and the CAR/SAM Air Navigation Plan, the Meeting evaluated the main difficulties faced by the SAM States for the effective compliance of the aforementioned requirements, according to **Appendix B** (and its Attachment 1) to this part of the Report. After analysis of the indicated difficulties, the Meeting considered convenient to make some corrections with respect to the text included in referred Appendix, for its presentation in the final report. Likewise, it adopted the actions required on this matter, as detailed hereunder:

CONCLUSION 1/4 - FUNCTIONING OF NOTAM OFFICES

That in order to guarantee a constant and effective flow of NOTAM information in the SAM Region, pertinent States should take the corresponding measures to assure that their NOTAM Offices give a 24 hours continuous and efficient service, all days a year.

CONCLUSION 1/5 - AERODROME AIS DEPENDENCIES

That States of ICAO South American Office not having done so:

- a) establish AIS aerodrome dependencies, to provide pre-flight information service, in accordance with Annex 15, at the international aerodromes listed in AOP Table of the CAR/SAM Regional Air Navigation Plan.
- b) establish on an appropriate and well equipped and with a easy access to the users, the AIS aerodrome dependencies.

CONCLUSION 1/6 - POST-FLIGHT INFORMATION

That, considering the need of and effective application of the technical requirements of Chapter 8 (Pre- and post-flight data information), of ICAO Annex 15, SAM Region States which have not yet done so, establish a programme to assure that necessary requirements are being taken in order that information is given regarding the condition and functioning status of air navigation facilities observed by flight crew during their operations, in all international airports.

CONCLUSION 1/7 - REQUIREMENTS OF AIS/MAP PERSONNEL

That States of the ICAO South American Region take note of the need to improve the technical level of AIS personnel, and for that purpose:

- a) promote a detailed revision of the AIS training programmes existing at present, with the purpose that same can be adapted to attend in an efficient and progressive manner, the new role to be played by AIS services among the CNS/ATM environment, in direct support of GNSS/FMS systems;
- b) promote the use of English as working language in the AIS training programmes, in order to be able to overcome the great deficiencies observed at present in the use of such language by the AIS/MAP personnel; and
- c) prepare AIS training modules, oriented mainly to instruct AIS personnel in the direct and efficient use of automated systems as basic working tools of AIS, the direct application and control of quality systems as well as the methods for the quality assurance of AIS systems.

CONCLUSION 1/8 - AERONAUTICAL INFORMATION PUBLICATION (AIP)

Considering the need for an effective publication of AIP document by SAM States:

- a) those not having done so, should urgently prepare and publish, in a restructured format, their Aeronautical Information Publication (AIP), individually or collectively;
- b) measures should be taken in order to include all aeronautical charts required for each particular aerodrome, in the AIP/aerodrome section;
- c) all geographic coordinates included in the AIP, should be referred to the WGS-84 system. In cases where that is not feasible, such difference should be clearly represented;

- d) likewise, the differences between the regulations and national practices and the corresponding ICAO SARPs, should be submitted in the appropriate AIP part; and that
- e) in view of the importance of the aeronautical information contained in the AIP, such publication should be maintained totally up-to-date. This should be made publishing the AIP amendments, according to publication dates at regular intervals.

CONCLUSION 1/9 - AIP SUPPLEMENTS

That taking into consideration the main objective of AIP Supplement, States of the Region shall take the corresponding measures to:

- a) incorporate, with a minimum delay, the AIP Supplements information and data to be included in the AIP; and
- b) ensure that the important information for operations requiring amendments to the flight documentation (for example promulgation of new and/or reviewed instrument approach procedures), issued by means of an AIRAC AIP Supplement, should be accompanied by charts or diagrams, whatever corresponds, to help in its interpretation.

CONCLUSION 1/10 - AERONAUTICAL INFORMATION CIRCULARS (AIC)

That, taking into consideration the importance of promulgating pertinent information by means of AICs, States respective actions should be taken by the States in order to a major spreading of ICAO Annex 15, Chapter 7 regarding requirements to promulgate aeronautical information strictly in accordance with AIC requirements, should be given in AIS training programmes as well as in the civil aviation administrations.

CONCLUSION 1/11 - PROMULGATION OF NOTAM

Taking into consideration the need to adequately and effectively coordinate the information to be promulgated by NOTAM:

- a) NOTAM should be used strictly to promulgate temporary information, with a short period of duration;
- b) the temporary information promulgated by means of NOTAM, should not be valid for more than three months. If temporary information promulgated by NOTAM remains being valid for more than three months, it should be published with a new NOTAM number in its substitution;

- c) The promulgation of the monthly NOTAM summary and the NOTAM check-list, should include a list of the AIP amendment, AIP Supplement and AIC Circulars in effect.

CONCLUSION 1/12 - AIRAC SYSTEM

Taking into consideration the need for an opportune reception of operational character information by the users, States of the ICAO South American Region:

- a) which have not yet done so, should implement the AIRAC system with a minimum delay, according with the requirements of Annex 15;
- b) take pertinent actions to guarantee the effective application of AIRAC system, by means of an adequate familiarization with the involved technical services, in order to comply with this system according with the specifications of Annexes 11, 14 and 15;
- c) assure that the aeronautical information of importance for aeronautical operations is at user's disposal with at least 28 days in advance with respect to its effective date, a period of 56 days previous to this date is established for the distribution of the Supplement and/or AIRAC AIP Amendment;
- d) the introduction of modifications to the information promulgated by means of the AIRAC system, should be avoided by all means, specially during the first 28 days after its effective date; and
- e) the schedule containing the program of AIRAC effective dates, the dates of publication and the limit dates for the reception by AIS of the basic information to be disseminated by means of this system, should be published once a year and distributed to all services and basic information origin responsible agencies.

CONCLUSION 1/13 - PRODUCTION OF AERONAUTICAL CHARTS

Taking into account the need for an effective production and maintenance of aeronautical charts required by ICAO Annex 4 and according to the requirements of such products, as indicated in the FASID CAR/SAM document, States of the ICAO South American Region should take necessary actions to produce under WGS-84:

- a) Aerodrome Obstacles Charts - ICAO, Type A and C, for all international airports, where these are required;
- b) Aerodrome/Heliport Charts - ICAO, according to the specifications prescribed for such type of charts;

- c) World Aeronautical Chart - ICAO 1:1 000 000 (WAC), according to the distribution sheets indicated for each State in particular; and
- d) in a standardized form and according to the guide model of ICAO Document 8697, the En-route Navigation Charts – ICAO, the Area Chart – ICAO, the Standard Instrument Departure/Arrival Charts (SID/STAR), as well as the Instrument Approach Charts – ICAO.

APPENDIX A
CAR/SAM AIR NAVIGATION PLAN
PART VIII
AERONAUTICAL INFORMATION SERVICES
AND CHARTS (AIS/MAP)

Introduction

[CAR/SAM/3 RAN, Rec. 12/1]

1. This part of the Caribbean and South American Basic Air Navigation Plan contains basic planning principles, operational requirements and planning criteria, implementation guidelines and stable material related to aeronautical information services and charts (AIS/MAP) considered to be the minimum necessary for effective planning of AIS and MAP facilities and services in the CAR/SAM regions. A detailed description/list of the facilities and/or services to be provided by States in order to fulfill the requirements of the Basic ANP is contained in the CAR/SAM Facilities and Services Implementation Document (FASID), as agreed between the provider and the user States concerned. During the transition and pending full implementation of the future CNS/ATM systems, it is expected that the existing requirements would gradually be replaced by new CNS/ATM related requirements. Subsequently, it is expected that some elements of the CNS/ATM systems will be subject to amendment, as necessary, on the basis of experience gained in their implementation.
2. The Standards, Recommended Practices and Procedures to be applied, and related guidance material are contained in the following ICAO documentation:
 - a) *Annex 4 - Aeronautical Charts*;
 - b) *Annex 15 - Aeronautical Information Services*;
 - c) *Annex 11 - Air Traffic Services*;
 - d) *Annex 14 - Aerodromes, Volume I - Aerodrome Design and Operations* and *Volume II - Heliports*;
 - e) *Aeronautical Information Services Manual* (Doc 8126);
 - f) *Aeronautical Charts Manual* (Doc 8697);
 - g) *ICAO Abbreviations and Codes* (PANS-ABC, Doc 8400); and
 - h) *World Geodetic System - 1984 (WGS-84)* (Doc 9674).
3. Background information of importance in the understanding and effective application of the plan is contained in the *Report of the Caribbean/South American Regional Air Navigation Meeting* (Doc 9194) and the Reports of the Second and Third Caribbean/South American Regional Air Navigation Meetings (Doc 9543 and Doc 9749, respectively).

4. Regional Air Navigation Meeting recommendations shown in brackets below a heading indicate the origin of all paragraphs following that heading. A recommendation shown in brackets below a paragraph indicates the origin of that particular paragraph.

General procedures

Introduction

5. The major objective of aeronautical information services is to ensure the flow of information necessary for the safety, regularity and efficiency of international civil aviation. To support the CNS/ATM systems, the aeronautical information services and charts (AIS/MAP) should be directed towards the real-time provision of electronic aeronautical information/data that would ensure quality and integrity of the information provided.

6. In the CNS/ATM systems, the future users' requirement will be to access, on a global basis, quality aeronautical information by all users at all times. To achieve this high-level requirement, aeronautical information must be provided electronically, based on a commonly agreed and standardized data model. Strict quality assurance principles should be put in place in order to ensure that aeronautical data is of the required quality (accuracy, resolution and integrity), verified and validated before it is provided to the users. This will give users the required confidence in the quality of information that is critical to flight safety.

7. To support the CNS/ATM systems, the following basic AIS/MAP requirements should be satisfied in the future:

- a) real-time provision and exchange of electronic aeronautical information/data, through a system that guarantees the quality and integrity of the information provided;
- b) provision and exchange of aeronautical information/data through modern communication means including data link that would allow interrogation of aeronautical data bases on the ground from the aircraft; and
- c) harmonization of AIS and MET information/data to support combined automated pre-flight and in-flight briefing facilities.

Quality system

8. The aeronautical services involved in the provision and maintenance of aeronautical data should be organized in such a manner that the quality system be introduced in all the functional stages of the aeronautical data process, from the data origination to the distribution/provision of data. The established quality system should be in conformity with the International Organization for Standardization (ISO) 9000 series of quality assurance standards and the system should be certified by an approved organization.

Support for the AIS and MAP services

9. To enable the AIS/MAP services to function efficiently and in accordance with the defined requirements, sufficient funds should be allocated by States in their budgets that will ensure that all the administrative and operational requirements of AIS/MAP are met including the availability of sufficient and properly qualified personnel with all the required facilities, equipment and material.

10. The highest priority should be established and ascertained to the requirements for printing of AIS documentation including charts. Where practicable, printing facilities should be placed under the direct control of the AIS Headquarters.

11. The personnel working for aeronautical information and charts services should possess the skills and competence required to perform specific assigned functions. The required skills and competencies should be demonstrated by the AIS/MAP personnel through initial and periodic assessments on which basis the corresponding certificate of competence equal to an AIS license may be accorded.

12. AIS and MAP personnel should be accorded the status comparable to that assigned to technical personnel of other air navigation services.

Coordination between AIS and other technical services

13. Coordination/liaison on a permanent basis should be established between AIS/MAP and other technical services responsible for planning and operating air navigation facilities and services. At least one person from those services should be assigned and be responsible for maintaining continuous liaison with AIS/MAP.

14. Technical services responsible for origination of the raw aeronautical information should be acquainted with the requirements for promulgation and advance notification of changes that are operationally significant as established in Annexes 11 and 14 and other relevant ICAO documentation.

15. Appropriate AIS/MAP personnel should be included in the air navigation planning processes. This should ensure the timely preparation of appropriate AIS documentation and that the effective dates for changes to the air navigation system and procedures are satisfied.

Training of AIS and MAP personnel

16. Within the context of the quality system implemented, the AIS and MAP training programme should ensure that AIS and MAP personnel are appropriately trained according to the skills and competences required to perform specific assigned functions.

17. AIS personnel should receive professional training commensurate with the most recent technological developments requiring high level of knowledge and skills. AIS personnel should have, as an essential part of their training, sufficient knowledge of aeronautical cartography to permit them to verify information that is published on charts. In addition, AIS personnel should possess sufficient background in automation and knowledge of the English language as are necessary for the performance of their duties.

18. In addition to the conventional cartographic and geography training programme, knowledge of the following elements should also be taken into account when developing a training programme for MAP personnel:

- a) hardware-scanners, plotters, computers, soft proofing devices (CRTs), image setters, and digital memory systems;
- b) local area networks and worldwide area networks;
- c) software - programming familiarity, flow chart usage and creation, operating systems, communication formats, digital code systems, and documentation skills; and
- d) cartographic equipment and software operations skills (developed through “hands on” experience).

19. AIS and MAP personnel should be able to demonstrate that they possess the skills and competencies required to perform assigned specific functions. Periodical checks should be undertaken to ensure that the personnel continue to meet the required standards and if shortfalls in knowledge, skills or competence are detected, corrective measures should be taken.

Organization of Aeronautical Information Services

Aerodrome AIS Units

(FASID Table AIS-1)

20. The aerodrome AIS units to be provided at international aerodromes listed in the Appendix to Part III of the CAR/SAM Basic ANP are set out in Table AIS 1 of the FASID.

21. The aeronautical information to be made available at international aerodromes listed in the Appendix to Part III of the CAR/SAM Basic ANP is set out in Table AIS 2 of the FASID.

22. The exchange of aeronautical information documentation and availability of such documentation from international aerodromes listed in the Appendix to Part III of the CAR/SAM Basic ANP is set out in Table AIS 4 of the FASID.

23. Aeronautical information service at aerodromes should be provided on a 24-hour basis, except as otherwise agreed between the AIS authority, the air traffic services authority and the operators concerned. Agreed operational hours of the aerodrome AIS units and details of the service provided should be indicated in the Aeronautical Information Publication in accordance with Annex 15.

24. English should be among the languages used in aeronautical information briefings and consultations.

25. The aerodrome AIS unit should provide full pre-flight information/briefing service to flight operations personnel and aircrew, for the entire coverage zone. The coverage zone for pre-flight information service at each aerodrome AIS unit should be determined taking into account the final

destination of aircraft departing from the aerodrome concerned. This should be done in consultation with aircraft operators and be reviewed from time to time and/or when the air traffic pattern is expected to change.

26. The aerodrome AIS units should be adequately staffed and properly equipped for the provision of effective pre-flight information service. Installation of systems for the automated processing (storage, retrieval and preparation of pre-flight information bulletins (PIB)) should be considered at an early stage.

27. Aerodrome AIS units that provide pre-flight information services should be established at locations conveniently accessible to flight operations personnel at the airports, preferably on the ground floor (apron level) of airport terminal buildings.

28. Arrangements should be made between the aerodrome AIS unit, airline operations personnel (including flight crews) and air traffic services for an effective cooperation, coordination and reporting of post-flight information on inadequacies in the status and operation of air navigation facilities. To ensure submission of post-flight reports to aerodrome AIS units without delay, arrangements should be made at airports that a suitable form like the one provided at Appendix B of the ICAO *Aeronautical Information Services Manual* (Doc 8126) be made available to ATS, airline operations offices and aerodrome AIS units.

29. Tables AIS 1 and AIS 2 of the FASID should be implemented as soon as possible.

International NOTAM Offices (NOFs) (FASID Table AIS 3)

30. The International NOTAM Offices to be provided in the CAR/SAM regions are set out in Table AIS 3 of the FASID.

31. International NOTAM Offices should be adequately staffed and properly equipped for the provision of effective 24-hour service.

32. Table AIS 3 of the FASID should be implemented as soon as possible.

INTEGRATED AERONAUTICAL INFORMATION PACKAGE

Aeronautical Information Publication (AIP)

33. States that have not already done so should, as a matter of urgency, prepare and publish in the new, restructured format their Aeronautical Information Publication (AIP), either individually or collectively. The format is prescribed by ICAO Annex 15 and the guidance material is provided in the *Aeronautical Information Services Manual* (Doc 8126), Appendix H.

34. Information contained in the AIP should be complete and thoroughly checked for correctness before it is provided to the users. To ensure consistency throughout the AIP, changes to the AIP should be made in such a way that information of the same facility, service, procedure, etc. affecting one part be changed in the other part(s), if applicable.

35. The differences between the national regulations and practices and the corresponding ICAO SARPs should be provided in the appropriate part of the AIP.

AIP Amendments

36. In view of the vital importance to the safety of air navigation of the aeronautical information contained in the AIP, this information should be kept up to date. This should be done by publishing AIP Amendments on specific publication dates or in accordance with a publication schedule based on regular intervals.

37. AIP Amendments should be issued at least once every six months.

AIP Supplements

38. Information in the AIP Supplement appropriate for inclusion in the AIP should be incorporated therein with a minimum of delay.

39. Information in the AIP Supplement that is still valid at the end of six months should be re-issued with a new number indicating clearly that the new Supplement is a replacement and that the information it contains remained unchanged from the one previously issued.

40. Aeronautical information of operational significance, requiring substantive amendments to flight documentation (e.g. promulgation of new and/or revised instrument approach procedures) promulgated by an AIRAC AIP Supplement, should be accompanied by charts or diagrams, as appropriate, to aid interpretation.

41. To enable users of aeronautical information to keep records of current information, checklists of AIP Supplements in force should be provided regularly through the monthly printed summary of NOTAM.

Aeronautical Information Circulars (AIC)

42. Aeronautical Information Circulars (AIC) should be used to promulgate aeronautical information strictly in accordance with Chapter 7 of Annex 15.

Use and validity of NOTAM

43. NOTAM should be mainly used for promulgation of information of a temporary nature and of short duration. Temporary information promulgated by NOTAM should not remain in force longer than three months. In exceptional cases, if temporary information promulgated by NOTAM remains in force for longer than three months, a replacement NOTAM should be issued.

44. Use of the abbreviations WIE (“with immediate effect”) and UFN (“until further notice”) in the NOTAM format under Items B and C respectively, must be avoided and instead, a ten-figure group giving year, month, day, hours and minutes in UTC should be used when originating NOTAM. When information on timing is uncertain, a ten-figure date-time group should be followed by an EST to indicate the approximate duration of information.

AIRAC system

45. States that have not yet done so, should implement the AIRAC system in accordance with the requirements of Annex 15, with the minimum of delay.

46. Successful implementation of the AIRAC system depends directly on the level of coordination established among the relevant technical services and the AIS. To ensure a high level of coordination, States should prepare their national regulations so that they well define the duties and responsibilities of those technical services that provide raw AIRAC information to AIS for publication. The technical services involved should be familiar with the AIRAC system and comply with it in accordance with specifications provided in Annexes 11, 14 (both volumes) and 15.

47. To ensure that aeronautical information of operational significance reaches users at least 28 days in advance of the AIRAC effective date, measures should be taken to ensure that:

- a) information/data prepared in hard copy format be issued and distributed at least 56 days in advance of the effective date; and
- b) information/data provided in electronic format be distributed at least 35 days in advance of the effective date.

48. A schedule of AIRAC effective dates, publication dates and cut-off dates for the receipt by AIS of the raw information to be promulgated through the AIRAC system should be issued once a year and distributed to all services and agencies responsible for the origination of the raw information.

49. Changes to the information promulgated by the AIRAC system should be avoided by all means, especially during the first 28 days.

WORLD GEODETIC SYSTEM - 1984 (WGS-84)

Introduction

50. In order to support implementation of the future CNS/ATM systems, States should make every effort to implement WGS-84 and provide geographical coordinates referenced to this system. A detailed description/list of the WGS-84 coordinate data to be provided by States in order to fulfill the requirements of the Basic ANP is contained in the CAR/SAM Facilities and Services Implementation Document (FASID).

51. The Standards, Recommended Practices and Procedures (SARPs) to be applied in respect of WGS-84 are contained in the following ICAO documents:

- a) for the accuracy of the field work (surveying):
 - 1) Annex 11 - *Air Traffic Services*; and

- 2) Annex 14, *Aerodromes*, Volume I - *Aerodrome Design and Operations* and Volume II - *Heliports*; and
- b) for the charting and publication resolution, respectively:
 - 1) Annex 4 - *Aeronautical Charts*; and
 - 2) Annex 15 - *Aeronautical Information Services*.

52. To assist States in the uniform implementation of the WGS-84 related SARPs, the guidance material on the provision of geographical coordinates referenced to the WGS-84 datum is provided in the *World Geodetic System — 1984 (WGS-84) Manual* (Doc 9674). Background information on the importance and understanding and effective application of the Plan is contained in the Appendices 2E and 2F of the GREPECAS/6 Report, as amended by Conclusion 7/11 and Appendix 4E of the Seventh Meeting of GREPECAS.

WGS-84 Requirements (FASID Table AIS 5)

53. Table AIS 5 sets out the requirements for geographical coordinates referenced to the WGS-84 datum at international aerodromes, in flight information regions (FIR), en route and in terminal areas.

54. States which have not done so should make the necessary arrangements to develop a national WGS-84 implementation plan and such a plan should contain a timetable for implementation. When developing a national WGS-84 plan, States should establish a committee composed of personnel from the appropriate aeronautical as well as from the geographic/geodetic departments of the State. Such a committee should be tasked with the management of the WGS-84 implementation plan.

55. States in a position to do so should provide assistance in the implementation of WGS-84 to other States that need such assistance.

56. Before the geographical coordinates based on WGS-84 are published in the Aeronautical Information Publication (AIP) and on charts, every effort must be made to validate and verify them.

57. States which have common boundary points, should coordinate WGS-84 data for those points prior to publication of this information in their respective AIPs.

58. In order to ensure that quality (accuracy, resolution and integrity) and traceability requirements for the WGS-84-related geographical coordinate data are met, States must take measures to develop and introduce a quality system programme. This programme containing procedures, processes and resources should be in conformity with the International Organization for Standardization (ISO) 9000 series of quality assurance standards.

AERONAUTICAL CHARTS

Aeronautical charting programme

(FASID Table AIS 6)

59. States, individually or collectively, should include in their AIP derived from their aeronautical chart production programmes at least the following types of charts:

- a) Aerodrome Obstacle Chart - ICAO Type A;
- b) Aerodrome Obstacle Chart - ICAO Type C;
- c) Precision Approach Terrain Chart - ICAO;
- d) Enroute Chart - ICAO;
- e) Area Chart - ICAO;
- f) Standard Departure Chart Instrument (SID) - ICAO;
- g) Standard Arrival Chart Instrument (STAR) - ICAO;
- h) Aerodrome/Heliport Chart- ICAO;
- i) Instrument Approach Chart - ICAO;
- j) Visual Approach Chart;
- k) World Aeronautical Chart - ICAO 1:1 000 000.

Note - In the production of Aerodrome Obstacle Charts - ICAO Type A, Aerodrome Obstacle Charts - ICAO Type C, Instrument Approach Charts - ICAO, Aerodrome/Heliport Charts - ICAO and Precision Approach Terrain Charts - ICAO, States shall take into account ICAO Annex 4 requirements and Table AOP 1.

60. The detailed aeronautical chart requirements are set out in Table AIS 6.

Production responsibility for sheets of the World Aeronautical Charts - ICAO 1:1 000 000

(FASID Table AIS 7)

61. States which have not yet produced the World Aeronautical Chart-ICAO 1:1000 000, in accordance with the sheet distribution shown in Table AIS 7, should take the necessary measures to ensure the preparation of the sheets for which they are responsible, either through individual effort or with the collaboration of other States or specialized cartographic agencies.

62. The production responsibility for sheets of the World Aeronautical Chart - ICAO 1:1 000 000 are set out in Table AIS 7 and illustrated on Chart AIS 2.

63. Where the agency producing the charts is not under the control of the aviation administration, States should ensure good liaison between them, and accord the necessary priority in their national chart production programmes to the production of the required aeronautical charts.

Aeronautical chart production

64. States which have not produced the aeronautical charts specified hereunder, should produce them as soon as possible.

- 1) Aerodrome Obstacle Chart - ICAO Type A;
- 2) Aerodrome Obstacle Chart - ICAO Type C;
- 3) Precision Approach Terrain Chart - ICAO;
- 4) Enroute Chart - ICAO;
- 5) Instrument Approach Chart - ICAO;
- 6) Aerodrome/Heliport Chart - ICAO;
- 7) World Aeronautical Chart - ICAO 1:1 000 000.

AUTOMATION IN AIS

65. Automation in AIS should be introduced with the objective of improving the overall speed, accuracy, efficiency, and cost-effectiveness of the aeronautical information service in the region.

66. AIS automation should offer a service to meet the individual requirements of the various categories of users. This goes beyond the provision of pre-processed data and the pre-flight bulletin types traditionally provided manually or by early automated systems. For reasons of cost effectiveness, such a service should strike a balance between the degrees of complexity of the system required and the sophistication of the products provided.

67. The development of automation within AIS should be based on an integrated CAR/SAM regional automated AIS system concept, in order to obtain a general standardization of procedures, products and services to users and to avoid potential divergences, incompatibilities and duplication of effort.

68. The implementation of such a system should permit a cost-effective evolution of the regional system, taking account of the present and future technical possibilities and should be governed by the following principles:

- a) participating national AIS System Centres (NASCS) should closely cooperate in adopting the different elements that will make up the integrated CAR/SAM region automated AIS system, taking into account their current and planned degree of development;

- b) States that have not yet done so should initially automate NOTAM service within their own AIS while taking into account the users' requirements;
- c) certain NASC should cooperate with other not-yet-automated AIS systems, carrying out agreed functions to improve the efficiency and the quality of processing of basic aeronautical information and of its distribution both within an agreed area of the system and externally;
- d) optimum use should be made of available communication and public networks as well as of new communication technology for the dissemination, exchange and retrieval of aeronautical information, particularly NOTAM;
- e) the ICAO NOTAM format containing the necessary qualifiers to facilitate the sorting and retrieval of NOTAM information in accordance with users' requirements should be used exclusively;
- f) a system interrogation capability which takes account of the different categories of systems users should exist;
- g) common "user friendly" query procedures for the interrogation of AIS or NOTAM databases should be used. These procedures should be in accordance with the different levels of user requirements;
- h) States must establish quality systems and procedures which will ensure that the available aeronautical information is of appropriate quality (accuracy, resolution, integrity and timeliness);
- i) A State which decides not to automate its AIS may arrange, in the interest of improved efficiency, on the basis of bilateral or multilateral agreements between States or other non-governmental organizations, for the provision of automated services on its behalf. The arrangement must take into account the non-transferable responsibility of a State for the provision of aeronautical information as well as other technical and administrative aspects associated with such agreement.

69. The development of the integrated CAR/SAM region automated AIS system should take into account provisions of Annex 15 for the use of World Geodetic System - 1984 (WGS-84), the adopted common geodetic reference system, when aeronautical geographical coordinates are provided.

- END -

APPENDIX B

1. **Difficulties observed in the supply of pre-flight information service**

1.1 Regarding the supply of pre-flight information services, the persistence of a series of deficiencies is observed as follows:

- a) lack of enough AIS qualified staff to cover the necessary shifts at the AIS unit;
- b) AIS staff designated to provide pre-flight information services at the aerodrome AIS units, are regularly assigned non-AIS duties such as, handling of flight plans (in some cases approval of flight plans) which could have a detrimental effect on the provision of pre-flight briefing;
- c) in some cases pre-flight information service is made available on a limited basis only (only short distance domestic or regional flights but not for long distance flights);
- d) PIBs or selective NOTAM summaries are either not provided or its provision leaves much to be desired;
- e) lack of adequate filing procedures for national and foreign AIS publications (e.g. AIP, AIP Supplement, NOTAM, AIC), and/or, these documents are not kept up-to-date;
- f) shortage of specialized aeronautical charts required for the provision of the pre-flight briefings;
- g) lack of adequate communication links between the aerodrome AIS units and the NOF and/or between these dependencies and the airlines operational offices;
- h) inadequate location at the terminal building of the AIS unit, therefore, not easily accessible to flight crew; and
- i) lack of adequate automated systems for the direct and effective support of international users.

2. **Post-flight information service**

2.1 With regard to the filing of post-flight reports and according to the study made on the subject, it can be noted that there is practically no compliance with Annex 15 in this respect within the area being considered by the meeting. This situation is primarily due to the absence of provisions, on part of States, to enable aircrews to comply adequately with this requirement. Following may be the main causes for the non-compliance with these provisions:

- a) lack of established liaison between AIS and the ATS services;

- b) lack of administrative regulations to encourage compliance with Annex 6. Para 4.1.2 requirement by aircrew;
- c) lack of appropriate arrangements to enable compliance with the Annex 15, Para. 8.2 provisions at aerodrome AIS units;
- d) lack of report forms, and absence of arrangements to receive post-flight reports at terminal buildings;
- e) unsuitable physical location of AIS unit at aerodrome.

3. **International NOTAM Offices (NOF)**

3.1 With reference to the required establishment of International NOTAM Offices (NOF) and in spite of the operation of such dependencies in ICAO South American Region, it can be observed that some difficulties are still directly affecting the effective functioning of existent NOFs, as stated hereunder:

- a) not always provide a continuous 24 hour service
- b) lack of enough qualified AIS personnel to cover all shifts in these dependencies, to give a 24 hour service during all days of the year;
- c) requirement of efficient communication channels with the COM office at the airports responsible for the transmission of aeronautical messages, including NOTAM information;
- d) in some cases, the transmission of NOTAM through the aeronautical fix service network (ATS), is not given the required priority.

4. **AIS personnel requirement**

4.1 With reference to the requirements of AIS personnel, the need that actions should be taken in order that AIS services can always count with sufficient qualified aerodrome personnel for the normal fulfillment of their functions can be observed. In such sense, a series of elements as those stated below, can be observed, for the integral improvement of AIS services in the area under consideration by the meeting.

- a) AIS Headquarters (central office), International NOTAM Office, AIS/MAP Office and aerodrome AIS dependencies, should at all times count with sufficient qualified personnel to satisfy aircraft exploiters, particularly attending the volume of traffic, at a 24-hour-day service;
- b) Interested States should adopt necessary measures to give highest priority to the training and the service conditions of the personnel assigned to AIS and MAP functions;
- c) Introduction of AIS related databases and the use of digital equipment in AIS/MAP services, are conducting to the requirement to extend the reaches of AIS/MAP

personnel training programmes. In this regard, States, should take the required actions;

- d) Beyond the requirements related to AIS/MAP, States should consider the need to incorporate subjects such as automation and English language knowledge in all training programmes designated to the training of personnel in such specialties;
- e) In the digital scope for the automated production of aeronautical charts, it will be required that the aeronautical cartographer counts not only with the traditional skills as cartographic designer, but also a considerable more technical and managing instruction than it was in the past. In such sense, States should consider such factors for the training and/or up-dating of their AIS/MAP personnel; and
- f) The formulation of adequate dispositions for the expedition of a license and its corresponding habilitations to AIS/MAP personnel, has always been considered as an important factor to improve the AIS/MAP personnel category. Therefore, States should continue exploring the possibility of such alternative.

5. **Aeronautical Information Publication (AIP)**

5.1 After the States have published their AIP in accordance with the requirements of Annex 15 it is essential to ensure that the AIP is kept up-to-date by issuing amendments on a regular basis (e.g. twice or three times a year), or as and when necessary. The meeting will be able to examine the main deficiencies observed in the supply of AIP and to decide on the measures to be adopted to improve, whenever necessary, the contents, the presentation and the up-dating of AIP. With regard to this matter, following should be observed:

- a) In several cases it is noticed that programmes for maintaining AIPs up-to-date through the regular issuance of AIP amendments, leaves much to be desired; consequently, information contained in such AIPs are out of date, thus jeopardizing the safety of flight operations. Notwithstanding the possibility of issuing AIP Supplements, the promulgation of AIP AIRAC Amendments should, as far as possible, be preferred;
- b) In general, under part GEN of national AIPs, frequency and interval established for the regular publication of AIP Amendments should be included. On this regard, it can be observed that not all States comply with this requirement and in other cases, even complying with it, there is no strict control of cases when dates on established publication calendar is maintained.
- c) An up-dated list of AIP valid verifications should be kept. The new introduced and/or modified information should be clearly identified on the AIP substitute pages.
- d) As far as possible, hand made corrections should be avoided. For corrections of importance substitute pages should be used;

- e) Listing of differences from ICAO SARPs and procedures should be kept up-to-date,
- f) Aeronautical charts should be included as specified by Annex 15, in the appropriate parts of the AIP rather than in a separate publication.

6. **AIP Supplements**

6.1 With regard to the use of AIP Supplements by the States of the South American Region, it should be noted that there exist some difficulties, as specified hereunder, for its evaluation by the Meeting:

- a) information more appropriate for publication as AIP Amendment, is promulgated through AIP Supplements, and, instead of its inclusion in the ANP, is maintained for periods exceeding six months validity;
- b) information appropriate for publication as AIP Supplement under AIRAC regulatory system, is published through AIP regular Supplement, without giving the anticipation required for this type of information;
- c) AIP Supplement is not replaced by a new AIP Supplement when the information contained in the first one is changed;
- d) It is common practice of some States to issue AIP Supplements for the notification of changes in instrument approach procedures but without illustrative diagrams or charts to aid interpretation;
- e) AIP Supplement check-lists are either not issued or are issued irregularly;
- f) very often, AIP Supplements which have not been assigned the required distribution priority have their distribution delayed for weeks due to the lack of funds to pay for mailing costs;

7. **Aeronautical Information Circulars (AIC)**

7.1 With reference to the use of Aeronautical Information Circulars (AIC) by the States of the ICAO South American Region, it can be observed that factors such as the lack of co-ordination between the AIS and the other departments within the civil aviation administration, and the lack of knowledge in the AIS field to clearly identify what kind of information is to be promulgated through this type of publication are apparent. Consequently there can be observed some difficulties for the use of AIC, which are stated below for its evaluation by the Meeting.

- a) AIC are inappropriately used to update information contained in AIP;
- b) AIC are seldom used to provide a long-term forecast of any major change in legislation, procedures or facilities;
- c) publication by NOTAM or AIP Supplement of information which is more suited to an AIC; and

- d) most States use AIC exclusively to publish information such as the annual AIRAC calendar, changes in prices of AIS publication and sometimes, for AIC lists of verification; and
- e) failure to publish the AIC check-lists at least once per year.

8. NOTAM

8.1 Although improvement has been noted in the issue of monthly printed plan-language summaries of NOTAM in force including indication of the latest AIP Amendment, checklist of AIP Supplements and AIC issued, it is nevertheless observed that some States are still not complying with this requirement. On several occasions these summaries have reached the recipients of the Integrated Aeronautical Information Package three months after the publication date. Consequently, there were observed some difficulties in the use of AIC, some of which are presented below for its evaluation by the Meeting.

- a) on too many occasions information is promulgated by NOTAM, which should have been issued as AIP Supplement or AIP Amendment;
- b) NOTAM are used to cancel AIRAC AIP Supplements or modify the AIP at very short notice;
- c) NOTAM remain in force for excessive periods of time without being replaced by AIP Supplements or having their content incorporated in to the AIP;
- d) non-cancellation or non-replacement of NOTAM which includes EST;
- e) issuance of a NOTAM which deals with more than one subject and more than one condition related to the subject;
- f) NOTAM often contains excessive text which causes delays in transmission of NOTAM via the AFTN;
- g) “trigger” NOTAM have not been issued (giving a brief description of the contents. The effective date and the reference number of the AIP Amendment or Supplement published in accordance with AIRAC procedures);
- h) NOTAM are used to promulgate information which should have been disseminated during pre-flight or in-flight briefings;
- i) often, not all NOTAM are received in sequence of NOTAM numbering or not received at all, As soon as this is noticed, requests to repeat the missing NOTAM should be sent to the communications system and the communication authorities should be made aware of the problems encountered. In some cases NOTAM information is not immediately transferred to the NOF by the communications centre. Arrangements should be made to ensure that “receiving” NOTAM be sent to NOF without delay and that “outgoing” NOTAM be channeled to the foreign addresses with appropriate urgency;

8.2 Some States do not follow correctly the guidance for the completion of the ICAO NOTAM Format when preparing NOTAM. The following are the most common deficiencies identified with the use of the NOTAM Format:

- a) non-use, or incomplete/improper use of the NOTAM qualifier line (Item Q);
- b) frequent use in NOTAM Format, Item B), of the phrases “with immediate effect” (WIE) instead of a ten-figure group, giving year, month, day, hours and minutes in UTC for the date-time at which the NOTAM N comes into force;
- c) in many cases, when information on timing is uncertain, the phrase “until further notice” (UFN) is used in NOTAM Format Item C), instead of a ten figure data-time group followed by an EST to indicate the approximate duration of information;
- d) difficulties with use of the NOTAM Format Item D) - Time Schedule;
- e) excessive plain language is used in NOTAM Format Item E) instead of the uniform abbreviated phraseology associated with the NOTAM Code in the English language amplified or completed where necessary by the addition of location indicators, name of station, geographical coordinates, abbreviations, frequencies, call signs, and some plain language where it be necessary;
- f) difficulties with respect to the figures necessary to complete NOTAM Format Q) line, fields 6 and 7, and its direct relationship with the Items F and G.

9. AIRAC System

9.1 The AIRAC System has been implemented by most States in the area covered by the meeting. However, this requirement is not being applied by a significant number of States, The main reasons for the implementation difficulties seem to be shortage of suitable AIS personnel, shortage of printing equipment and lack of coordination between AIS and the technical department within the aviation administration responsible for planning and providing the raw information to AIS for promulgation. Where the AIRAC system has been applied, the following deficiencies have been noted:

- a) an AIRAC AIP Amendment has seldom been used to promulgate operationally significant permanent changes to the AIP;
- b) AIRAC AIP Supplements have not been used to promulgate operationally significant temporary changes of long duration to the AIP;
- c) AIP Supplements promulgated under the acronym AIRAC, are issued with dates different from the pre-determined AIRAC effective dates;
- d) AIRAC AIP Supplements are distributed after the AIRAC effective date printed on the Supplement;
- e) Promulgated AIRAC information is sometimes amended or cancelled within its period of validity by NOTAM;

- f) AIRAC information is promulgated late so that users are receiving it less than 28 days in advance of the effective date; and
- g) The AIRAC NIL notification requirement is not complied with.

10. **Aeronautical charts**

10.1 Regarding the production of aeronautical charts by the States of the ICAO South American Region, some difficulties as stated below, can be observed:

- a) the requirement of production of the **Aerodrome Obstacle Chart-ICAO Type A** has been satisfied by most of the States concerning, although these type of charts are not always given for all aerodromes used for the commercial air transport. In some cases, these are produced according with the specifications of Annex 4. The major difficulty for accomplishing with this requirement seems to be the lack of an adequate programme to conduct the necessary topographic and obstacle surveys;
- b) at present, only one SAM State is not producing the **Precision Approach Terrain Chart-ICAO**, as required;
- c) regarding the requirement of production of aeronautical charts such as the **En-Route Navigation Chart – ICAO**, the **Area Chart – ICAO**, the **Standard arrival/departure charts – flight by instruments (SID/STAR) –ICAO**, although this requirement was satisfied by most of States, it was observed that in many cases, these charts are being produced only with one partial application of ICAO specifications;
- d) all SAM Region States publish the **Instrument Approach Chart – ICAO**. Although de majority of published charts, partially use the specifications of Annex 4. It therefore lacks a standardization according to ICAO standards. Likewise, some charts are not amended nor published again opportunely when important changes arise;
- e) with regard to the production of the **Aerodrome/Heliport Chart – ICAO**, it has to be indicated that not all States have accomplished with the requirements for the editing of these charts of geographic coordinates, based on WGS-84 geodetic reference, indicating as well, vertical data based on the vertical component of WGS-84. The geoid undulations at the runway thresholds should be also indicated;
- f) with reference to the production of the **World Aeronautical Chart – ICAO 1:1 000 000 (WAC)**, its production results difficult to estimate as several States have not included information regarding this type of chart in their AIP, nor have submitted copies of the charts published by them to ICAO. Nevertheless, it can be observed that several States have faced great difficulties for its production or to fully comply with the standards of Annex 4, mainly because no budget has been assigned for this purpose neither by the administrations nor by the aeronautical entities;

- g) regarding the status of production of **Aerodrome Obstacle Chart – ICAO, Type C**, it has to be mentioned that the production of this chart is not required, when States have accomplished the requirements of publishing all obstacle data, or when no obstacles of importance exist, in their respective AIP. Nevertheless, due to the characteristics of the terrain surrounding in most of the aerodromes of the SAM Region and the fact that the requirements above mentioned are not being effectively fulfilled, it is considered necessary to recommend States to do their best efforts in order to comply with the production of this series of charts.

ATTACHMENT 1 TO APPENDIX B

PRESENT LEVEL OF AIPs IN THE SOUTH AMERICAN REGION

STATES	PRESENT LEVEL OF AIPs				
	Produced under Annex 15 format	Produced under Old format	WGS-84 data	Up-dating frequency	Remarks
ARG	X		√ Lack of geoid undulation publication	OK	
BOL	X		NIL	√ Major level of up-dating required.	√ Need for a more frequent review of AIP.
BRA	X		√ Lack of geoid undulation publication	OK	√ Inclusion of AD section in approach, departure and arrival charts is required.
CHI	X		√ Lack of geoid undulation publication	OK	√ Inclusion of all charts required in AD section (ej. Approach, departure and arrival charts).
COL	√ Charts included in AD section.		√ Lack of geoid undulation publication	√ Need of a AIP review system, based on a regular amendments programme.	
ECU	X		√ Lack of geoid undulation publication	√ Need of AIP up-dating, under a regular amendments programme.	

STATES	PRESENT LEVEL OF AIPS				
	Produced under Annex 15 format	Produced under Old format	WGS-84 data	Up-dating frequency	Remarks
FGY	X		X	OK	
GUY	X √ Need of inclusion of all charts required in AD section (ej. Approach, departure and arrival charts).		NIL	√ Need of major level of up-dating under a regular amendment programme.	
PAN	X		NIL	OK	
PAR	X		√ Lack of geoid undulation publication.	√ Need of major level of up-dating under a regular amendment programme.	
PER	X		√ Lack of geoid undulation publication.	√ Need of a frequent AIP review system under a regular amendment programme.	
SUR	X		√ Lack of publication of all WGS-84 data, besides the geoid undulation.	√ Need of a frequent AIP review system under a regular amendment programme.	
URU	X		√ Lack of geoid undulation publication	√ Need of a frequent AIP review system	

STATES	PRESENT LEVEL OF AIPs				
	Produced under Annex 15 format	Produced under Old format	WGS-84 data	Up-dating frequency	Remarks
				under a regular amendment programme.	
VEN		X	NIL	√ Poor level of AIP up-dating.	
