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CAR/SAM Regional Planning and Implementation Group (GREPECAS)

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Agenda Item 2: Review of the Reports of the AIS/MAP Subgroup Contributory Bodies
2.2 ICAO/PAIGH Aeronautical Charts Working Group (MAP-WG)

PROPOSAL OF A WORK PLAN FOR THE PRODUCTION OF VFR AERONAUTICAL CHARTS IN THE CAR/SAM REGIONS

(Presented by the Rapporteur of the ICAO/PAIGH Aeronautical Charts Working Group (MAP-WG))

SUMMARY

This working paper reviews the proposed action plans for the resolution of AIS/MAP deficiencies; assesses the degree of acceptance of the work plan and considers new proposals by the States on the implementation of required actions.

References:

- Report of the Ninth Meeting of the Aeronautical Information Services Subgroup (AIS/MAP/SG/9), (Santo Domingo, Dominican Republic, 13-17 June 20).
- Report of the Thirteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS), (Santiago, Chile, 14-18 November 2005).
- Coordination and implementation of information on aeronautical charts meeting (Lima, Peru, 10-14 July 2006).
- ICAO Annexes 4 and 15.

1. Introduction

1.1 This working paper takes into account the actions of the ICAO/PAIGH Aeronautical Charts Working Group (MAP-WG), the PAIGH Aeronautical Charts Working Group and ICAO/PAIGH Aeronautical Charts Project, which were reported at the Coordination and Implementation of Information on Aeronautical Charts Meeting held in Lima, Peru.

1.2 The AIS/MAP/SG/9 Meeting studied the need for a specialized work group to analyze and fulfill the tasks of aeronautical charts production in States of the CAR/SAM Regions.

1.3 The GREPECAS/13 Meeting approved the continuity of the AIS/MAP Subgroup and the ICAO/PAIGH Aeronautical Charts Working Group (MAP-WG) was established as part of the Automation and AIS/MAP Database Task Force.

1.4 Considering the AIS/MAP deficiencies in the CAR/SAM Regions, the new technical requirements in the MAP and automation areas, as well as the implementation of quality systems in aeronautical charts and the transformation to the WGS/84 system, it was deemed necessary to review the implementation plans of these technical requirements and establish new technical requirements, processes and an activity schedule. In this regard, at the meeting in Lima, Peru, a work plan was presented based on the integration of efforts of ICAO and PAIGH on a background data input processing plan on the current status of VFR aeronautical chart production in the CAR/SAM States.

2. Discussion

2.1 After analysis of deficiencies with implementation of AIS/MAP requirements in the CAR and SAM Regions, as well as the progress with regard to production, storage and distribution of geographical information, it is deemed necessary that both the production of electronic aeronautical charts, the automation of AIS/MAP systems and the implementation of quality systems be developed to comply with inter-functionality, flexibility, adaptability and inter-operability requirements contained in the global model for exchange of information and aeronautical data, as well as with the international standards for the production, use and transmission of geographical information.

2.2 Historically, in Latin America the production of aeronautical charts has been a duty assigned by the States to national geographical institutions that, due to budgetary constraints, have not been able to provide permanent continuity to the priority of that duty. For the same reason, civil aviation authorities did not react in due time to address this issue, and the problem has become one of the most significant deficiencies in the AIS/MAP field in the CAR/SAM Regions.

3. Proposed Work Plan for the Production of VFR Aeronautical Charts in Scales 1:1.000.000 and 1:500.000

3.1. Planning the Production of Aeronautical Charts

3.1.1 The working group deemed it suitable to continue producing VFR aeronautical charts in 1:1.000.000 and 1:500.000. In view of the time elapsed since the detection of the deficiencies, it becomes necessary to know the current status of chart production in the different States and from the background gathered, to define a common strategic plan (refer to **Appendix A** to this working paper), which will allow compliance with the action plan for MAP deficiencies and guide chart production according to new scientific technological trends. This task has been named "Data Input Processing Plan," and is based on using State data from the AIS/MAP catalogue, which will allow for diagnosis of the status of aeronautical digital charts in the CAR/SAM Regions.

3 Suggested Action

3.1 To establish the basis that will allow production of aeronautical charts from the definition of essential and subject data organized by ISO TC 211 international standards and based on the development and management of common geographical databases, as well as the establishment of common general guidelines applicable to the production, distribution and use of aeronautical charts in the different States.

3.2 In order to comply with the work plan, it is deemed suitable that States analyse the aspects presented above and make comments using official channels in order to consolidate the final work plan. It is necessary that the meeting discuss the conclusions shown in **Appendix B** to this working paper.

APPENDIX A
STRATEGIC PLAN

1 Purpose

1.1 To develop a plan for the production and implementation of 1:1.000.000 and 1:500.000 VFR electronic aeronautical charts, required for planning, navigation and control, based on the specifications of Annex 4.

2. Integrants

2.1 The ICAO/PAIGH Aeronautical Charts Working Group (MAP-WG) is formed by Argentina, Brazil, Chile, Cuba, COCESNA and Jeppesen. The rapporteur is Ms. Barrientos of Chile.

3 Description

3.1 The work plan has to be consolidated, to provide assistance to the CAR/SAM States in order to make progress in the implementation of the Global Air Navigation Plan, in accordance with the CAR/SAM implementation plan and the standards and recommended practices of ICAO, concerning AIS/MAP systems, which is a current and real need of the States.

4. Objectives

4.1. General Objective

Development of a regional plan for the production of electronic aeronautical charts.

4.2. Specific Objectives.

- 1) Develop a “Data input process”, based on an AIS/MAP catalogue, allowing the diagnosis of the status of digital aeronautical charts in the Regions.
- 2) Integrate the efforts of ICAO and PAIGH concerning aeronautical charts, through an ICAO/PAIGH digital aeronautical charts project.
- 3) Integrate standardization aspects in accordance with ICAO in the productive processes of VFR aeronautical charts.
- 4) Planning and establishment of a quality management system of the Production of VFR aeronautical charts in the CAR/SAM Regions in accordance with the ISO standards on geographical information.
- 5) Development of an automated system of charts production based on geographical databases (GIS).
- 6) Review of the manuals of aeronautical charts production, focused on digital production.
- 7) Prepare a plan for the digital production of VFR charts based on the WGS-84 system.
- 8) Development of a regional plan of implementation and maintenance of the charts, applicable in all the member States.

5 Tasks

- 1) Review and reconsideration of the ICAO-PAIGH Project.
 - 1.1 Review and presentation of the ICAO/PAIGH project to the PAIGH Chart Committee, for the production of digital VFR aeronautical charts to scales 1:1.000.000 and 1:500.000 on a common standard. Likewise, present the project to ICAO, so that it may establish financing mechanisms required by the project.
- 2) Consider new funding sources for the implementation of the project; i.e. through TDA.
- 3) Preparation and presentation of the project.
- 4) Assessment of results.
- 5) Development and data entering of a VFR aeronautical charts catalogue, which will allow diagnosing the status of digital aeronautical charts in the CAR/SAM Regions.
- 6) Development of basic record for the survey of the chart information.
- 7) Data entering of the record.
- 8) Analysis of the results.
- 9) Data entering of the Catalogue.
 - 9.1 Data gathering (reports submitted by the States).
 - 9.2 Assessment of the results and approval of the catalogue.
- 10) Diffusion of the Catalogue
- 11) Procedural manuals, symbols and quality control
- 12) Review and proposal of the procedural manual for the production of VFR aeronautical charts.
 - 12.1 Structure of data.
 - 12.2 Codification of the elements and features.
 - 12.3 Geometry and features of the elements.
 - 12.4 Presentation, assessment and approval of the new manual.
- 13) Review and proposal of a manual of symbols of digital aeronautical charts.
 - 13.1 Structure of data and metadata.
 - 13.2 Fundamental data.
 - 13.3 Scheme and codification of the elements and features.
 - 13.4 Geometry and features of the elements.
 - 13.5 Presentation, assessment and approval of the new manual.
 - 13.6 Metadata (definition)
- 14) Incorporation of ICAO international standards in the production, maintenance, storage and diffusion of aeronautical charts.
- 15) Presentation of regulation ISO TC 211 “Geographical/ Geomatic Information”.
- 16) Analysis of the available and in force Series 19100 ISO/TC 211 regulation.
- 17) Establishment of a set of fundamental data.
- 18) Establishment of a procedure for the assessment of quality of the aeronautical charts.
- 19) Development of a manual of definitions and scopes of the standards.
- 20) Establishment of a manual of technical specifications for aeronautical charts.
 - 20.1 Reference system
 - 20.2 Aeronautical data source
 - 20.3 Representation of the aeronautical and topographic information
 - 20.4 Data spatial structure
 - 20.5 Quality of data
 - 20.6 Format specifications

20.7 Metadata.

- 21) Establishment of a Quality Control Manual for aeronautical charts
- 22) Establishment of common parameter for the production of digital aeronautical charts (electronic).
- 23) Procedure for transforming from analogue to digital
- 24) Geodetic referencing (WGS-84 datum)
- 25) SIG-based digital aeronautical charts
- 26) Database managing systems
- 27) Exchange and inter-operability
- 28) Bilingual VFR aeronautical charts.

6. **Training.**

6.1 Develop a permanent training programme, with workshops, establishing objectives and teaching methods.

6.2 Quantification of costs, selection of instructors and determination of methods for the implementation of the classes (in the classroom, via Internet).

6.3 Implementation of the training programme in the CAR/SAM States.

7. **Assessment of results.**

7.1 Study of the automated systems of geographical databases and inter-operability.

7.2 Analysis and diagnosis of the available database systems and progress on the subject.

7.3 Analyse and apply proposals of inter-operability of geographical database (GIS).

8. **AIXM, Aeronautical Information Exchange Model.**

8.1 Develop a joint proposal and documentation for the inter-operability of the geographical databases between the member States, through the link in the operative design of the productive systems of the member States, for the establishment of a more efficient management of the assigned resources or possible resources to be assigned through the ICAO/PAIGH project.

8.2 Establishment of a progress schedule and of work meetings.

9. **Needs**

9.1 The basis to support, coordinate and supervise the activities performed shall be established in the framework of this working group. The following are logistical needs:

- 1) At the working group level
 - a) analyse and approve the work plan
 - b) establish an activity schedule
 - c) organize coordination meetings

- d) consider the budgetary assignment in each institution for the continuity of the group's activities
 - e) support the participation of the members of the working group in courses, workshops and seminars.
- 2) At the ICAO/PAIGH project level
- a) reactivate the PAIGH group
 - b) reformulate the project
 - c) consider other support and funding alternatives.
 - d) study the feasibility of including the progress of the group in the production of IFR aeronautical charts.

APPENDIX B

PROPOSED DRAFT CONCLUSIONS

**DRAFT
CONCLUSION 10/X1 APPROVAL OF THE WORK PLAN IN ITS IDEA PHASE**

That, taking into account the deficiencies and the new requirements posed by science and technology for the production of geographical information:

- a) the inclusion of that progress be considered for productive systems of VFR aeronautical charts in all the States of the CAR/SAM Regions; and
- b) a work schedule be established, taking into account the items pointed out in the work plan; to this end, States would commit themselves to submit the background information at the established dates.

**DRAFT
CONCLUSION 10/X2 SUBMISSION OF SURVEY INFORMATION FOR THE
DEVELOPMENT OF THE CATALOGUE**

That States assess, approve, complete and submit to the Rapporteur the background information requested in the “Automatic Input for the charts production survey in ICAO CAR and SAM Regions” programme, in order to use this information to develop the catalogue and for metadata design purposes.

**DRAFT
CONCLUSION 10/X3 REFORMULATE THE PROJECT PRESENTED TO PAIGH**

That, taking into account the remarks made by the PAIGH Charts Commission Chairman:

- a) the ICAO/PAIGH project for the production of aeronautical charts be presented again;
- b) the project presented to PAIGH be revised and structured in accordance with the format required by that organization;
- c) the financial requirements that will be requested to PAIGH be set, considering that the amounts provided by this organization do not exceed US\$8,000 per year; and
- d) other funding alternatives be considered for the implementation of the project, i.e. that it be implemented with funds provided by United States' Trade Development Agency.

**DRAFT
CONCLUSION 10/X4 CONSOLIDATE THE ICAO/PAIGH GROUP**

That:

- a) work be coordinated with ICAO/PAIGH Aeronautical Charts Working Group (MAP-WG) for the production of aeronautical charts on a common productive basis; and
- b) the feasibility of join into a sole document the PAIGH and ICAO procedural manuals, symbols and quality be analysed.

**DRAFT
CONCLUSION 10/X5 IMPLEMENTATION OF A DATABASE IN THE CAR/SAM
REGIONS**

That, with a view to establishing a common database system, a survey be conducted to know the progress status, the kind of data and the quality of data, at a regional level. All this will allow knowing the data set, which should be entered in the database.

**DRAFT
CONCLUSION 10/X6 IMPLEMENTATION OF AN INTEGRATED DATABASE
SYSTEM IN THE CAR/SAM REGIONS FOR INTER-
OPERABILITY PURPOSES**

That, with a view to make known the progress status and the resolution of deficiencies, a regional database be established, based on background information gathered in a regional survey, in order to facilitate both the production of charts within the States, the transmission of data and the use of VFR charts in the CAR/SAM Regions.

**DRAFT
CONCLUSION 10/X7 USE OF THE INTERNET FOR THE CONSTITUTION OF THE
REGIONAL CATALOGUE AND PROVISION OF
INFORMATION.**

That, Internet be considered as a technological tool for the constitution of the regional catalogue and diffusion of results.

**DRAFT
CONCLUSION 10/X8 IMPLEMENTATION OF A QUALITY SYSTEM FOR THE
PRODUCTION OF VFR AERONAUTICAL CHARTS OF
1:1.000.000 AND 1:500.000.**

That, in order to ensure the quality of aeronautical charts produced, as well as the production procedures and reliability of the data sources:

- a) the implementation of a quality system based on ISO international standards be considered; and

- b) in view of the importance of this scope, the meeting should assess the progress made by Chile in order to take it as an example.

DRAFT

CONCLUSION 10/X9

**UPDATING OF MANUALS FOR THE PRODUCTION OF VFR
AERONAUTICAL CHARTS AT 1:1.000.000 AND 1:500.000.**

That,

- a) the manuals developed both by ICAO and PAIGH for the production of aeronautical charts based on traditional procedures be studied in order to structure them and re-define them to be applied in the electronic production of aeronautical charts, through the use of modern technological tools; and
- b) the technical specification manuals, procedural manual for the chart production, symbols manual and quality assurance manual be analysed.

- END -