

Agenda Item 5: Tentative program of project activities for 2003**5.1 Introduction**

5.1.1 Under this agenda item, the meeting reviewed the proposal of project activities for 2003.

5.1.2 Information on the cost for the project of each activity has been included in compliance with the request of the Fourth Meeting of the Coordination Committee of RLA/98/003 project carried out in Lima, Peru, from 4 to 5 December 2001.

5.1.3 A summary of the program of activities for 2003, as well as a gantt diagram is presented in **Appendices B and C** to this agenda item.

5.1.4 The details of the activities approved for 2003 is presented hereunder.

5.2 ATM issues**5.2.1 Activities for RVSM, RNAV and RNP implementation**

5.2.1.1 Activity 1.2.3 of RLA/98/003 project is focused to the preparation of seminars and activity 1.3.1 to the preparation of an action plan for CNS/ATM systems implementation in the Region, including RNAV and the implementation of the reduced vertical separation minimum and the required navigation performance.

5.2.1.2 In this respect, the meeting took note that RLA/98/003 project has been successfully supporting the activities tending to the implementation of the above mentioned ATM elements and functions.

5.2.1.3 RVSM, RNAV routes and RNP implementation is a complex process that requires a carefully and well-coordinated plan to ensure a timely, cost-efficient and evolutionary transition.

5.2.1.4 In order to carry out and ensure the continuity of RVSM, RNAV routes and RNP Implementation in the CAR/SAM Regions, the Civil Aviation Administrations will require the maximum availability of trained specialists and with enough information regarding the referred implementation processes.

5.2.1.5 Therefore, with the purpose of achieving a successful and timely implementation of such CNS/ATM elements, it is required and proposed to carry out the following activities:

a) II Seminar on RVSM Implementation in the CAR/SAM Regions***Objective/Contents***

Provide general information to Civil Aviation Administrations of the CAR/SAM Regions on RVSM Implementation, highlighting the aspects related with airworthiness and operations

approval requirements and with the height keeping performance for RVSM approval by the corresponding authority.

Place/Date/Duration

The II Seminar on RVSM Implementation in the CAR/SAM Regions will be held in Panama, Panama, from 16 to 17 June 2003, with a duration of two days.

Estimated cost of the activity

NOTE: *The cost of this activity is presented together with AP/ATM/5.*

b) Fifth Meeting/Workshop of ATM authorities and planners for RVSM, RNAV routes and RNP Implementation (RVSM-RNAV-RNP)

Objective/Contents

The main objectives of the AP/ATM/5 Meeting/Workshop will be as follows:

- Continue assisting and coordinating with the parties involved in the Action Plan for RVSM Implementation in the CAR/SAM Regions;
- Evaluate the RNP Application Strategy in the CAR/SAM Regions to be presented by the RNAV/RNP Task Force;
- Continue with the follow-up and assistance to the States/International Organizations in the activities related to the Action Plan for RNP 10 Pre-operational Implementation in the Santiago de Chile/Lima segment of routes UL 780 and UL 302; and
- Evaluate the status of the coordinations to include in the CAR/SAM Air Navigation Plan – Basic Vol. the RNAV routes proposed during the AP/ATM/4 Meeting/Workshop for its further implementation.

Place/Date/Duration

The AP/ATM/5 Meeting/Workshop (RVSM-RNAV-RNP) will be held in Panama city, Panama, from 18 to 20 June 2003, with duration of three days.

Estimated cost of the activity

NOTE: *This Meeting/Workshop will be carried out in the same facilities and right after the conclusion of the II Seminar on RVSM Implementation in the CAR/SAM Regions.*

The cost of this activity including trip and DSA for personnel, translation of material, 2 fellowships per participant State plus 5 fellowships envisaged for non-participating States and project administrative costs is approximately **US\$54,000.00**.

c) **Sixth Meeting/Workshop of ATM authorities and planners for RVSM, RNAV routes and RNP Implementation (RVSM-RNAV-RNP)**

Objective/Contents

The main objectives of the AP/ATM/6 Meeting/Workshop will be as follows:

- Continue assisting and coordinating with the parties involved in the Action Plan for RVSM Implementation in the CAR/SAM Regions;
- Formulate an Action Plan for RNP Implementation in the CAR/SAM Regions, based on the evaluation of the CAR/SAM RNP Application Strategy to be approved during the AP/ATM/5 Meeting/Workshop.
- Continue the follow-up and assistance to the States/International Organizations in the activities related to the Action Plan for RNP 10 Pre-operational Implementation in the Santiago de Chile/Lima segment of routes UL 7780 and UL 302; and
- Evaluate the status of the inclusion in the CAR/SAM Air Navigation Plan – Basic Vol. of the RNAV routes to be approved during the AP/ATM/5 Meeting/Workshop for its further implementation.

Place/Date/Duration

The site of the AP/ATM/6 (RVSM-RNAV-RNP) Meeting/Workshop will be determined on due time and the date planned for its carrying out is from 27 to 31 October 2003, with a duration of five days.

Estimated cost of the activity

The cost of this activity including trip and DSA for personnel, translation of material, 2 fellowships per participant State plus 5 fellowships envisaged for non-participating States and project administrative costs is approximately **US\$58,000.00**.

5.3 Training and Human Resources

5.3.1 Seminar on CNS/ATM human resources and training

5.3.1.1 The safely and efficient implementation, operation and maintenance of CNS/ATM systems highly depends on the timely availability of well trained personnel. This critical aspect is being considered by several groups with different objectives. From an operational point of view, it is necessary to determine the type of instruction required and the personnel level. From an economic point of view, it is necessary to know the effect that CNS/ATM systems implementation will have in the current human resources during the transition and, subsequently, for systems operation.

5.3.1.2 The current Immediate Objective No. 3 of RLA/98/003 project is directed to provide assistance to States in the implementation of the national plans for the transition to CNS/ATM systems, including human resources and financial requirements and the appropriate training programs.

5.3.1.3 Within this Objective, result 2.3 pursues that Civil Aviation Training Centres receive guidance to establish the training programs that the change of technology may demand.

5.3.1.4 With this purpose, since the third coordination meeting, a seminar has been planned, through the participation of training centers directors, human resources planners and other specialists involved, in order to enable the exchange of experiences and provide the necessary forum to share ideas and points of view in this respect.

5.3.1.5 This seminar has been postponed in several occasions and is finally planned for 2003. A brief description of this activity is presented hereunder:

Objective/Contents

The main objective of the seminar is to guide CAR/SAM States in human resources planning and training needs for the new CNS/ATM systems operation and maintenance. For this purpose, the work will basically be performed on the planning guidance document prepared by ICAO. The seminar will be developed as a workshop; the attendants will actively participate and will have the opportunity to obtain the most recent information in this regard. The contents will initially include the following topics:

- Overview of the new CNS/ATM systems based on the Global Air Navigation Plan for CNS/ATM systems and on the CAR/SAM Regional Air Navigation Plan.
- Analysis of the actual situation of human resources and training for the transition to the new CNS/ATM systems in the CAR/SAM Regions.
- ICAO policies and guidelines regarding human resources global and regional planning and training needs.
- Identification of the training needs by State based on regional planning, basic training, initial training, transition training, conversion training and review training.
- Determination of the required training capacity at a regional level and specialized regional centers.
- Economic considerations in the implementation of resources and training needs.
- Human resources and training planning experience for the transition to the new CNS/ATM systems in other regions or States.
- Discussion periods and tasks preparation.

Place/Date/Duration

This seminar/workshop/discussion forum is foreseen to take place in Cartagena de Indias, Colombia, from 19 to 23 May 2003. The discussion sessions will be dedicated to enable the interactive process and exchange of points of view.

Estimated cost of the activity

The cost of this activity including the participation of two international experts (ICAO Montreal) and an Officer from the Regional Office, simultaneous interpretation services, supporting material and project administrative costs is of approximately **US\$43,200.00**.

5.4 ATM Expert

5.4.1 In compliance with the request of the Tenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS), RLA/98/003 Project is actively supporting the complex and laborious activities being developed for RVSM, RNAV routes and RNP Implementation in the CAR/SAM Regions. Following such requirements and in order to continue with the development and execution of those implementation plans and adjacent activities, an ATM expert is required with complete and continuous dedication to assist the ICAO Regular Programme in the referred implementation processes, contributing in the timely and successful achievement of the objectives foreseen by GREPECAS, according to the terms of reference presented in **Appendix A**.

5.4.2 The cost of this resource per one year of activities is approximately of **US\$77,200.00**.

5.5 Seminar on Air Navigation Systems Automation

5.5.1 Activity 1.2.3 of RLA/98/003 project is directed to the preparation of a program of seminars for the officers concerned of civil aviation administrations regarding several topics related to air navigation services automation with emphasis in ATM automation.

5.5.2 In this respect, it has been appropriate to program a seminar to disseminate ATN applications and others related to air navigation services, as well as their inter-operation in support of the ATM.

Objective/Contents

Provide the civil aviation administrations the most recent information about the processes of air navigation services automation in support of the ATM. The contents of the seminar will include the following topics:

- Digital communications support testbed
- ATN applications (COM)
 - CPDLC
 - AIDC
 - AMHS
 - ADS

- D-ATIS
- ATM functionality with ATN applications and others
- Current processing systems
- Flight plans processing
- Radar data processing
- AIS applications
 - o NOTAM Procedures
 - o Pre-flight reports
 - o AIS database
 - o MET applications

Place/Date/Duration

This seminar will take place in Lima, Peru, in November 2003.

Estimated cost of the activity

The cost of this activity including trip and DSA for personnel, translation of material, simultaneous interpretation, 2 fellowships per participant State plus 5 fellowships envisaged for non-participating States and project administrative costs is approximately **US\$65,000.00**.

5.6 AIS issues

5.6.1 Seminar/Workshop on vertical data determination WGS-84

5.6.1.1 Background

5.6.1.2 Immediate Objective No. 3 of RLA/98/003 project, among other aspects, was mainly addressed to support participant States in the complete implementation of the World Geodetics System 1984 (WGS-84). In this respect, between the years 2000 and 2001, three seminars/workshops were carried out, through which a total of 122 specialists of different States and organizations received training in the specific topics of this issue. Additionally, during 2000, WGS-84 technical assistance missions were carried out to States of the CAR Region, such as: Belize, Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua; and of the SAM Region, Bolivia, Colombia, Panama, Peru and Venezuela. As a result of these actions, field geodetics works were developed in the main international airport of each State, technical assistance was provided by counterpart aeronautical experts during the execution of the project and specific recommendations were formulated in order to directly support these States in the tasks pending for the final implementation of the WGS-84.

5.6.1.3 Although important progresses have been achieved in the CAR/SAM Regions regarding the implementation of the WGS-84 System, it is well-known that there are still some deficiencies in a significant number of States that need to be solved in order to fully satisfy this technical requirement. Among the most relevant technical aspects in which additional support is required are:

- It is required to determine with accuracy the data on WGS-84 orthometric heights and ellipsoidal heights to accomplish the publication requirement in the respective AIPs of the WGS-84 geoid undulations data for each runway threshold of the international airports;

- It is required to coordinate the development of gravimetric surveys in order to determine with accuracy the geoid models (MSL/Gravimetric) and its direct relation with WGS-84 system, in order to have the assertion, confidence and accuracy of the geoid undulations data to be published.

5.6.1.4 As a result of the above and in order to continue supporting the relevant States in the complete implementation of the WGS-84 System, the need for the convening of a seminar/workshop on the determination of WGS-84 geoid undulations data has been foreseen.

Objective/Contents

Provide accurate and relevant information related to the determination of the WGS-84 orthometric heights and ellipsoidal heights data, as well as for the accurate determination of the WGS-84 geoid undulations data to be published for each of the runways thresholds of the international airports. Discuss and clarify the several application methods for the determination of the indicated data.

- Basic concepts on ellipsoid and geoid models and its inter-relationship.
- Concepts on WGS-84 ellipsoid and geoid and on the three dimensions of the WGS-84 geodetics system.
- Concepts on WGS-84 orthometric heights and ellipsoid heights and on the WGS-84 geoid undulation.
- Explanation on the advantages and disadvantages of the different application methods for the determination of the WGS-84 orthometric heights and ellipsoidal heights data, as well as on the WGS-84 geoid undulation data.
- Considerations to keep in mind when developing the field works and post-processing procedures in order to determine WGS-84 orthometric heights and ellipsoidal heights.
- Considerations to keep in mind when developing the post-processing calculations in order to determine WGS-84 geoid undulations data.
- Application of appropriate electronic tools in the processing and post-processing phases for the determination of WGS-84 orthometric heights and ellipsoidal heights data and WGS-84 geoid undulation data.
- Validation procedures of the WGS-84 geoid undulation data to be published.
- Methods to ensure the quality of WGS-84 geoid undulation data published.

Place/Date/Duration

This seminar/workshop would have a regular duration of three days and would take place in Rio de Janeiro, Brazil, from 2 to 4 December 2003, tentatively.

Site of the seminar/workshop

It would be convenient to carry out this seminar at the Instituto de Cartografia Aeronautica (ICA) of Brazil, in view of the technical and logistic capacity that could be provided at this institution for the effective development of this type of event.

Estimated cost of the activity

The estimated cost of this activity is **US\$50,200.00**, including the assignment of two geodetics experts, RO/AIS/MAP mission, simultaneous interpretation, translation of material if required; besides 2 fellowships for each State participant in the project, plus 5 fellowships envisaged for non-participating States.

5.7 Visits to States

5.7.1 Activity 1.4.1 of RLA/98/003 project is directed to the development of series of missions to assist participant States in the establishment of transition plans to CNS/ATM systems.

5.7.2 In this respect and as informed in agenda item 3, during 2002 a series of mission to the following States was carried out; Peru, Chile, Argentina, Brazil and Paraguay. The objective of these visits is to inform the States on the results so far obtained by the project, collect information about the CNS/ATM National Plan to verify its harmonization with the Regional Plan and discuss the possible solutions of regional arrangements for the implementation of multinational services/systems.

5.7.3 During these visits two meeting are planned with personnel of the respective administrations. The first one, with high level personnel to discuss institutional, legal, political and financial aspects related to the implementation of CNS/ATM systems, and the second one, with technical/operational personnel to discuss the topics related to the transition to CNS/ATM systems and the respective implementation strategies.

5.7.4 It is suggested to invite to both meetings high and technical/operational level representatives from the airlines. If necessary, separate meetings could be scheduled with airlines representatives.

5.7.5 In both meetings, with high level and technical/operational level staff, two Power Point presentations are developed in order to introduce each of the topics to be discussed. Among these topics are:

a) Meeting with high level personnel:

- CNS/ATM systems concept;
- Regional plan for the transition to CNS/ATM systems and implementation strategy;
- Benefits for air navigation services providers and for aircraft operators;
- Feasibility of multinational services and systems;
- Institutional, legal and financial aspects;
- Operational benefits for air navigation services providers and aircraft operators;
- Other aspects.

b) Technical/Operational Meeting:

- Air Navigation Regional Plan – Basic and FASID
- CAR/SAM regional plan for the transition to CNS/ATM systems;
- ATM Regional evolution and associated CNS systems;
- ATM Automation;

- RNAV/RNP and RVSM, main aspects;
- Implementation strategy;
- Operational benefits for air navigation services providers and aircraft operators;
- State participation in regional activities;
- Other aspects.

5.7.6 The meeting with high level personnel starts with the presentations of each expert of the project, considering an approximate time of 20 minutes for each one, followed by 10 minutes of questions. After this, an hour is programmed to exchange the administration points of view regarding the transition to CNS/ATM systems, as well as to the institutional aspects involved.

5.7.7 The meeting for technical-operational level personnel starts with 30-minute presentations of each expert of the project, with 15 minutes of consultations after each. At the end of the presentations, an hour is arranged to exchange the technical-operational points of view related to the transition to CNS/ATM systems, as well as to the concept of services and multinational facilities that may arise during this transition.

5.7.8 The experts start their activities greeting the Director General of Civil Aviation and after the above mentioned meetings, they gather with the personnel in charge of CNS/ATM activities (CNS/ATM National Committee), with the purpose of more in depth discussing the National Plan versus the Regional CNS/ATM Implementation Plan.

5.7.9 For the year 2003, visits to the following States and international organization participating in RLA/98/003 Project are planned: Bolivia, Colombia, Ecuador, Panama, Venezuela and COCESNA.

5.7.10 The cost of this activity including air tickets, DSA and experts fees and AOS is approximately of **US\$38,500.00**.

5.8 **Finalization and distribution of the document “*Guidance Material towards the ICAO Global ATM evolution in the CAR/SAM Regions*” produced by the project**

5.8.1 The document on “*Guidance Material towards the ICAO Global ATM evolution in the CAR/SAM Regions*” is structured as follows:

- **Volume I**
 - o Chapter 1 - Executive Summary
 - o Chapter 2 - Scope of the Study
 - o Chapter 3 - CNS/ATM
 - o Chapter 4 - Review of the Planning Methodology and considerations
 - o Chapter 5 - Specific comments and details concerning Traffic Flows TF1 to TF18
 - o Chapter 6 - Human Resources Planning and Training
- **Volume II - Consolidation of Requirements and Objectives**
 - o Chapter 7 - Foreword and Introduction
 - o Chapter 8 - Operational Concept and Consolidation Requirements
 - o Chapter 9 - Communications
 - o Chapter 10 - Evolutionary transition to GNSS

- o Chapter 11 - Surveillance
- o Chapter 12 - ATM Automation
- o Chapter 13 - To be completed
- o Chapter 14 - To be completed
- o Chapter 15 - CNS/ATM PET (Planning and Evaluation Tools)
- o Chapter 16 - Building a Business Case Model for CNS Technologies
- o Chapter 17 - Institutional Aspects

5.8.2 This documentation includes the results of the studies and work performed by the experts assigned to RLA/98/003 project. The document requires a final review and the development of an executive summary that may assist the administrations to have a view of the results and scope of it.

5.8.3 The tentative program of project activities for 2003 is included as **Appendix C**, to conclude with the preparation of the document “*Guidance Material towards the ICAO Global ATM evolution in the CAR/SAM Regions*”. The cost of this activity for the project is approximately of **US\$7,500.00**.

5.9 **Final tuning of the planning and evaluation tool of CNS/ATM systems (CNS/ATM PET)**

5.9.1 As every software, the PET requires some improvements for its further distribution among the participant States, these improvements include the following:

- Modification of the model to integrate international and national data bases.
- Modification of the model to calculate the net present value of a date established.
- Adjustment of the scenario templates as a result of previous activities.
- Fine tuning of the scenario, CBA and business cases and documentation.
- Development of the templates to model institutional arrangements.
- Separation of the files by States to enable their use within each State own environment.
- Development of a search by frequency function of the communications table 1, 2, 3.

5.9.2 **Appendix C** to this part of the report presents a Gantt chart with the work program for the development of this improvement in PET. The approximate cost of this activity for the project is of **US\$8,000.00**.

5.10 **Institutional aspects activities**

5.10.1 During the discussion of agenda item 4, a proposal for amendment of the Project Document including the reformulation of Immediate Objective No. 2 in order to orient it to CNS/ATM institutional aspects issues was presented. **Appendix C** presents a Gantt chart with the work programme proposed for the development of the activities of Immediate Objective No. 2. The approximate cost of the activities regarding this matter during 2003 is of **US\$7,200.00**.