ATFM/TF-PREP

INTERNATIONAL CIVIL AVIATION ORGANIZATION
SOUTH AMERICAN REGION

PREPARATORY MEETING OF THE GREPECAS ATM/CNS SUBGROUP, ATM COMMITTEE, ATFM TASK FORCE

REPORT

(Sao José dos Campos, Brasil, 3 to 5 August 2005)

INDEX

HISTORY OF THE MEETING

ii-1 PLACE AND DURATION OF THE MEETING

The Preparatory Meeting of the GREPECAS ATM/CNS Subgroup, ATM Committee, Air Traffic Flow Management (ATFM) Task Force was held in Sao José dos Campos, Brazil, form 3 to 5 August 2005, at the facilities of the Air Navigation Management Center (CGNA).

ii-2 OPENING CEREMONY AND OTHER MATTERS

Mr. Guilherme Francisco de Freitas Lopez, Chief of the ATM Management Division welcomed and greeted the participants, and inaugurated the meeting, emphasizing the importance of the matters to be dealt with. Also, Mr. Jorge Fernández, Regional Officer, ATM/SAR, from the ICAO South American Regional Office in Lima, offered a brief explanation on the issues that would be dealt with during the meeting.

ii-3 SCHEDULE, ORGANIZATION, WORKING METHODS, OFFICERS AND SECRETARIAT

The Meeting agreed to hold its sessions from 0800 to 1430 hours, with appropriate breaks. The work was done with the Meeting as a Single Committee.

Mr. Ricardo Nogueira delegate from Brazil was unanimously elected as Chairman of the Meeting. Mr. Jorge Fernández, Regional Officer, ATM/SAR, from the ICAO South American Regional Office in Lima, acted as Secretary.

ii-4 WORKING LANGUAGES

The working language of the Meeting was Spanish, and its relevant documentation was presented in the same language.

ii-5 AGENDA

The following agenda was adopted:

Agenda Item 1: Review the documentation on air traffic flow management and the policies established in the global, regional environment and existing national plans on ATFM.

Agenda Item 2: Define the principles in which CAR/SAM ATFM service will be based

Agenda Item 3: Review of the ATFM/TF Terms of Reference and Work Programme

Agenda Item 4: Other matters

ii-6 **ATTENDANCE**

The meeting was attended by 3 States of the SAM Region, 1 State from the CAR Region, as well as by IATA, totalling 18 participants. The list of participants is shown in pages iii-1 to iii-2.

ii-7 **LIST OF WORKING PAPERS AND INFORMATION PAPERS**

N°	Subject	Title	Prepared by
WP/01	-	Agenda, Schedule and Working Methods	Secretariat
WP/02	1	Air Traffic Flow Management (ATFM)	Brazil
WP/03	2	Technical and operational aspects related to ATFM	Secretariat
WP/04	3	Principles in which AFTM will be based in CAR/SAM Regions	ATM Comm. President
WP/05	4	Task list for ATFM implementation	Secretariat
WP/06	4	Terms of Reference and Work Programme of the ATFM/TF	Secretariat
WP/07	1	Institutional aspects for the management and control of systems and multinational facilities	Secretariat
WP/08	1	ATFM implementation in the Central America FIR	COCESNA
WP/09	1	AFTM criteria in Colombia	Colombia
WP/10	1	Summary of ATFM matters examined by the AP/ATM/10 Meeting	Secretariat
WP/11	1	Air Traffic Management Improved System (ETMS)	Chile
IP/01	--	General Information of the Meeting	Secretariat
IP/02	--	List of working papers and information papers	Secretariat

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Agenda Item 1: Review the documentation on air traffic flow management and the policies established in the global, regional environment and existing national plans on ATFM

1.1 GREPECAS/12, through its Conclusion GREPECAS 12/129, approved the terms of reference, work programme and composition of their auxiliary bodies. Task ATM-ATFM400 is shown in the ATM Committee work programme, where it is requested to develop an air traffic flow management (ATFM) system, with a view to its future implementation in the CAR/SAM Regions. In order to develop such task, the ATM Committee composed an ATFM Task Force.

1.2 The first Preparatory meeting of the ATFM Task Force (ATFM-PREP/1) was held in São José dos Campos, Brazil, from 3 to 5 August 2005, under the auspices of the Brazilian administration. The result of this meeting is presented below.

Policies established in the global, regional environment and existing national plans on ATFM

1.3 Under agenda item 1, the meeting, among other things, reviewed the working papers presented by States and International Organizations during the AP/ATM/10 Meeting with regard to existing national plans on ATFM and which were requested to be presented at the ATFM Preparatory Meeting, as well as the documentation available on this matter at global and regional level.

1.4 The meeting recalled that the ICAO 11th Air Navigation Conference (AN-Conf/11) concluded (Recommendation 1/1 – Endorsement of the global ATM operational concept) that ICAO, States and regional planning and implementation groups (PIRGs) should consider the global ATM operational concept as the common global framework for planning ATM systems implementation and to develop transition strategies for implementation of ATM systems based on the global ATM operational concept.

1.5 Accordingly, the meeting recognized that, in the last few years, CAR/SAM States, Territories and International Organizations, in close coordination with the CAR/SAM Regional Planning and Implementation Group (GREPECAS) and ICAO, have planned and developed an intense programme of activities for the implementation of various ATM initiatives through the application of CNS/ATM systems, with emphasis on the application of the ATM global operational concept, and using the recommendations formulated by the Eleventh Air Navigation Conference as the frame of reference for future activities.

1.6 In this respect, and in keeping with the analysis of main traffic flows carried out under Project RLA/98/003 - Transition to the CNS/ATM Systems in the CAR/SAM Regions, there are airspace sectors that are already having traffic congestion, especially on special and peak periods, basically due to the different capacities of the various ATC systems, or are being affected by traffic congestion, inadequate operation planning at some airports, and airport infrastructure limitations.

1.7 The meeting also recalled that the implementation of Flow Management Units (FMUs) contained in ATM Evolution Tables are tentatively scheduled for 2008, and the centralised regional ATFM, by 2010.

Regional activity

1.8 Note was taken on the various activities being carried out in the CAR and SAM Regions with regard to air traffic flow management.

1.9 In this regard, COCESNA considered that it was in an advantageous situation, since the resources available in the Organization and in the Central American States, as well as the projects currently being implemented, or in process of implementation, by COCESNA, would give the necessary support for achieving ATFM in the short term, considering the horizon established in the GREPECAS approved CAR/SAM ATM Evolution Tables.

1.10 The meeting was informed on the current air traffic flow management capabilities of the air navigation management centre (CGNA) located in Sao José Dos Campos, Brazil, and of the actions taken for ATFM purposes through the CGNA operational system. The meeting had the chance to visit its facilities and observe the SINCROMAX system working in real time, in pre-operational version, developed by Brazil for its utilization in the CGNA.

1.11 Likewise, it took note of the ATFM plans of Colombia, and the considerations presented on the technical and operational standards to permit inter-operability between air traffic control units.

1.12 The meeting noted that United States, based on its experience and in view of the great benefits of ATFM for users and ATS service providers, shall support and decidedly cooperate through bilateral and multilateral agreements with CAR/SAM States/Territories and International Organizations planning ATFM implementation. To this end, corresponding contacts have been initiated to establish agreements with COCESNA, Dominican Republic and other civil aviation administrations.

Institutional aspects for management and control of the systems and multinational facilities

1.13 In spite of recognizing that institutional aspects are being examined by the Task Force created to this respect, the meeting noted the points of view expressed at the RAAC/9 Meeting (Santiago de Chile, April 2005) by the Directors of Civil Aviation of the South American Region regarding the institutional aspects for the management and control of multinational systems and facilities, particularly on ATFM implementation.

1.14 When discussing this matter, it was noted that, given the nature of AFTM implementation, the institutional aspects for the management and control of multinational systems and facilities were important for the planning, development and implementation process of this service, and in this connection, that air traffic flow management (ATFM) could be considered as an initial system/service for this purpose, since:

a) ATFM is directly related to the component of the ATM operational concept that corresponds to airspace organisation and management;

b) It is related to other components of the concept; and

c) Technology for ATFM implementation is already available in the Region.

1.15 In the opinion of the Directors of Civil Aviation of the SAM Region, the following scenarios could be foreseen in the CAR/SAM/NAM Regions for the establishment of institutional arrangements, and which could be considered within the programming for ATFM implementation:

a) Sub-region integrated by Canada, Mexico and United States of America;

b) Central America with COCESNA, its regional mechanism;

c) The Caribbean; and

d) South America.

1.16 The meeting was of the opinion that these scenarios should be taken into account during the planning, but that they could be modified insofar as the operational concept development and the implementation plans progress.

1.17 The meeting felt that a CATFM should have the responsibility of providing service on the maximum extension of airspace possible, provided that this is an homogeneous area, in order to maximize its efficiency. In view of this, and taking into consideration CAR/SAM air traffic characteristics and density it could be said that through the implementation of one CAFTM, ATFM technical-operational needs would be covered.

Participation of ATFM/TF members in meetings of the Task Force on Institutional Aspects

1.18 The meeting considered that it would be advisable for members of the ATFM/TF, and vice-versa, to attend the meetings of the Institutional Aspects Task Force as observers, to coordinate as necessary. The next meeting of the Task Force on Institutional Aspects is planned to be held from 19 to 21 September 2005 in Caracas, Venezuela.

Enhanced Traffic Management System (ETMS)

1.19 The Meeting noted the information presented by Chile regarding the utilization in their ATC units of the ETMS, tool which, from their point of view, could be essential in radar information exchange for the effectiveness of ATM, with a view to avoid ATC load and congestion in certain areas during peak hours.

1.20 This air traffic management system or tool uses private internet virtual networks to transmit low cost safe communications, reason for which this system could be efficient and inter-operable in the exchange of flight information between air navigation services providers having this tool.

1.21 In order to advance with the mentioned regional ATFM, and consequently acquire experience on the know-how for FMU management, Chile proposed that trials and tests among States or between States and Organizations having the ETMS tool could be started with, in order to transit to surveillance radar data exchange.

1.22 In this connection, the meeting recalled that GREPECAS has encouraged radar data exchange with a view to improve radar surveillance and considered that it was not convenient to invite States to use a specific tool to this end. It was also recognized that some CAR/SAM States and COCESNA had already reached agreements on this respect and that it would be very convenient that the rest of the States consider radar data exchange in their development plans, in order to improve and make more effective the provision of ATS services.

Agenda Item 2: Define the principles in which CAR/SAM ATFM service will be based

Objectives, principles, functions and requirements in which CAR/SAM ATFM service will be based

2.1 The meeting analysed and agreed on the following basic guidelines to plan a possible structuring of the FMUs and a centralized regional ATFM (CATFM).

General aspects in the AFTM operational concept

2.2 ATFM implementation in the CAR/SAM Regions shall require identifying and determining which would be the minimum requirements of a CATFM, FMUs and/or flow management positions (FMP) in each CAR/SAM ATC unit. In this connection, the experiences obtained in Europe and in the NAM Region, as well as in some CAR/SAM States, are very useful in the definition of these requirements.

2.3 In general terms, the objectives pursued by a CATFM are mainly focused in handling air traffic flow to assist the ATC in avoiding excessive traffic loads at specific periods, demand and capacity balancing and thus contributing to safety and to minimize penalties that might affect airspace users, imposing certain restrictions due to the limited capacity of the ATM system avoiding high operational costs due to the impossibility to use optimum flight levels, delays or increase of miles covered.

2.4 As the ATM Operational Concept establishes, the function of demand and capacity balancing (DCB) shall consist in reducing to a minimum the effects of the limitations of the ATM system. This will enable to evaluate the air traffic flows and capacities of all systems in order to timely put into practice the necessary measures. The process of collaborative decision making (CDM) on the other hand, shall enable the efficient management through the use of information circulating within the system. Also, users shall participate in an optimum manner in the ATC system ensuring the most efficient use of airspace resources, shall provide the greater possible access to these resources, shall provide equitable access to all airspace users, shall give access to users' preferences and shall ensure that airspace demand does not exceed its capacity.

2.5 In view of the above, the meeting felt that the regional ATFM structure should be composed in such a way that each CAR/SAM State/Territory and International Organization may access the CATFM through an internal organization appropriate to its needs and developed as per guidelines determined on this matter.

2.6 Consequently, aware of each specific needs, as regards their ATC service, air traffic and airport problem, as well as air traffic volume, the administrations should define whether an FMU is necessary, which, besides communicating with the CATFM, should manage and coordinate with the FMP implemented in the ATC units that so require, or should adopt the direct communications process from these FMPs with the CATFM.

Objective of the Centralized AFTM

2.7 The objective of the CATFM shall be to contribute to a safe, orderly and expeditious flow of air traffic by ensuring that the capacity is utilized to the maximum extent possible, and that the traffic volume is compatible with the available capacities.

Principles in which ATFM will be based

2.8 The meeting agreed that the ATFM, to comply with its objectives, should be based on the following principles:

a) To be at disposal of CAR/SAM States/Territories and International Organizations, considering the requirements of operators, airports, ATC units and other pertinent ATFM units.

b) Use a common and permanently updated database.

c) Take pertinent measures well in advance to prevent and/or minimize overloads.

d) Keep close and continuous coordination with flow management units (FMUs) and/or flow management positions (FMPs), aircraft and airport operators, CAR/SAM ATC units and other pertinent ATFM units.

e) Take measures that ensure that existing delays are equitably distributed among operators.

f) Apply quality management to the services provided.

g) Base the implementation of ATFM measures in the collaborative decision making (CMD) process.

h) Favour, to the maximum possible, the use of the existing capacity without compromising safety.

i) Contribute in the achievement of the global ATM objectives.

j) Have the necessary flexibility to enable operators to change their arrival or departure schedules.

2.9 The meeting examined additional guidelines that could be used by the ATFM Task Force, as well as States/Territories and International Organizations, as reference in their studies on general concepts shown in **Appendix A** to this part of the Report.

Functions of a regional centralized ATFM

2.10 The meeting agreed that ATFM regional implementation will be a complex and laborious process and shall require the active participation of all parties involved. Also, it identified a series of functions that should be complied with by the centralized ATFM for the CAR/SAM Regions, as detailed below.

2.11 Provide the Air Traffic Flow Management (ATFM) Service in the Caribbean and South American Regions, which include among other, the following activities:

a) Establish and maintain a data base in the CAR/SAM Regions on:

- the air navigation infrastructure, ATS units and registered aerodromes;
- pertinent ATC and airport capacity; and
- flight data foreseen.

b) Establish a coherent chart of foreseen air traffic demand, including ad-hoc air traffic, a comparison with available capacity and determination of areas, and a time-frame of critical air traffic overloads foreseen;

c) Make the necessary coordination to make every possible attempt to increase the capacity available, when necessary.

d) When deficiencies in the capacity available matter may not be eliminated, determine and timely apply ATFM measures, as required, previously coordinated with aircraft operators and interested aerodromes.

e) Carry out a follow-up on the result of measures adopted.

f) Coordinate ATFM service with the other centralized ATFM units, when so required.

2.12 On the other hand, other aspects were analysed which could be taken into consideration for ATFM implementation, especially in the cost-benefit analysis. These aspects are shown in **Appendix B** to this part of the Report.

General requirements on operational implementation

2.13 The meeting considered that the operational implementation should be carried out by phases, so as to enable a progressive implementation and acquire the necessary capability for an adequate execution.

2.14 Each phase should be implemented on the basis of technical configurations, descriptive documents of the systems, and operational models, as required, to define the strategy to be established.

2.15 The initial implementation of the CATFM should be based on the following requirements:

a) Access to the operational status of the air navigation infrastructure.

b) Access to aeronautical information and cartography.

c) Access to meteorological information.

d) Data Bank of:

- aerodromes;
- airport capacity;
- ATC capacity
- Air traffic demand
- Airspace structure
- Radio navigation aids
- Aircraft performance; and
- Utilization of airports and control sectors.

e) Access to flight planning data (FPL, RPL, etc.).

f) Initial flight plans processing.

g) Access to surveillance data (SSR, ADS, etc.).

h) Automated resources:

- Processing and data visualization system for flow management, having, among other thing, the following sub-systems:
  - Flight data processing
  - Airspace and airports structure data;
  - Situation analysis (capacity and demand);
  - Presentation of air traffic situation;
  - Monitoring of the operational status of the infrastructure;
  - Support to decision making (ATC slots, alternate routes, etc.).

i) Database maintenance.

j) Telecommunications with:

- Other centralized ATFMs
- Operators (airlines, general aviation, State, etc.);
- Airport management;
- FMUs and/or FMPs and/or ATS units;
- Aeronautical meteorological units;
- AIS units.

k) Human resources

- qualified personnel;
- support personnel;
- recurrent training.

l) Use of adequate tools for statistics

m) Infrastructure

- buildings
- equipment
- electrical power
- air conditioning
- supplies
- software

n) Implementation of FMUs and/or FMPs, as required.

o) Redundancy of critical systems.

ATFM evolution in the light of the global ATM operational concept

2.16 Taking as a basis the experience of other ICAO Regions regarding ATFM application, it could be mentioned that the current ATFM system applied should evolve to a system where flow management is taken into consideration, as well as the capacity of the system as a whole. The change would be to move from a system mainly based in regulation mechanisms towards a system whose main function, in addition to regulation and flow management, is the management of demand and capacity balancing (DCB), known as air traffic flow and capacity management. Notwithstanding, it is recognised that at some times it will obviously be necessary to impose certain regulation conditions.

2.17 The global ATM operational concept represents ICAO's point of view regarding an worldwide integrated, harmonized and inter-functional ATM system. The planning horizon extends to 2025 and further.

2.18 The concept intends to achieve a global inter-functional air traffic management system for all users during all flight phases complying with the agreed safety levels, to provide economically optimum operations, to be environmentally sustainable and to meet national aviation security requirements.

2.19 Based on this concept, the industry developed a roadmap identifying the activities associated with CNS/ATM systems necessary to be adopted, with the aim of implementing, in the short- and medium-term, the initiatives foreseen in the global ATM concept to obtain early operational benefits.

2.20 Consequently, ICAO, as a follow-up of Eleventh Air Navigation Conference resolutions, taking into consideration the above-mentioned roadmap, and in line with the latest progress of the industry, is preparing the second amendment to the Global CNS/ATM Plan (Doc 9750), where the main operational initiatives will be introduced.

2.21 In the ATM operational concept, seven inter-dependent and inter-related components are defined to create the future ATM system. They comprise: airspace organization and management, aerodrome operations, demand and capacity balancing, traffic synchronization, airspace users operations, conflict management and ATM services delivery management.

2.22 While all the components in one way or another affect the provision of ATFM, one of the concepts that has particular incidence and importance as regards flow management and capacity of the system is the demand and capacity balancing.

2.23 In this connection, the meting considered it appropriate to have as objective the implementation of a regional air traffic flow and capacity management system, which shall enable to reach the balance between demand and capacity.

Action plan for ATFM implementation in the CAR/SAM Regions

2.24 On the basis of the experience obtained during the last years in the implementation of the various ATM functions, it was agreed that it is necessary to have a task list having as objective to identify each of the activities necessary for the implementation, their initial and finalization dates, and particularly the definition of the group or person responsible for their execution. In this connection, the following was approved:

Draft
Conclusion ATFM/1/2 Action plan for ATFM implementation in the CAR/SAM Regions

That the ATFM Task Force and States/Territories and International Organizations adopt for the implementation of ATFM in the CAR/SAM Regions the action plan shown in Appendix A to this part of the report.

Harmonization of the national ATFM implementation plan with the regional ATFM plan

2.25 In order to harmonize the national plans with the CAR/SAM ATFM Regional Plan, it is necessary that the administrations take pertinent measures and closely follow-up on regional ATFM development and, at the most convenient time, prepare an AFTM implementation programme, to determine real implementation needs; to analyse the impact on the national ATC systems, inasmuch in airspace, air traffic services, as in operations and airport services; and establish pertinent coordination to make possible a whole, harmonious and timely regional implementation. In this connection, the meeting agreed to formulate the following conclusion:

Draft
Conclusion ATFM/1/2 National plans for ATFM implementation in the CAR/SAM Regions

That, in order to achieve whole, harmonious and timely implementation, the CAR/SAM civil aviation administrations closely follow-up on the regional development of the AFTM and, at the most convenient time, elaborate a national plan for ATFM implementation compatible with the Caribbean and South American Regions AFTM implementation programme.

APPENDIX A

GUIDELINES FOR THE ATFM WORK OF THE GREPECAS ATM COMMITTEE AND CAR/SAM STATES/TERRITORIES AND INTERNATIONAL ORGANIZATIONS

1. Background

1.1. Flow control originated in the seventies, coinciding with the growth of tourism and progress of the aeronautical industry, which resulted in increased use of air transport and, thus, increased traffic density.

1.2. France, because of its strategic position in the European scenario (the main air routes crossing Europe from North to South and from East to West fly over France), pioneered the establishment of measures aimed at regulating air traffic flow, imposing unilateral criteria to protect operations in its airspace.

1.3. At the beginning, the measures adopted were as simple as separating operations over given points--normally major radio aids or FIR points of entry--, to maximise the number of operations per hour and ensure proper separation between them.

1.4. With time, the ACCs refined the measures applied to address traffic congestion and, thus, extensive use started to be made of quotas (number of aircraft in a given period) by flow, following an assessment of the likely demand on the day of operation, always based on experience, since there was no database to provide information.

2. Initial regional action

2.1. The aforementioned situation created a major distortion in air transport and, of course, in the European economy. Consequently, and since the capacity *versus* demand problem was getting worse, the ICAO European Office developed a European ATFM (Air Traffic Flow Management) service to manage the different traffic flows in that region.

2.2. In June 1980, the “Special European Regional Air Navigation” meeting was held in Paris, setting the foundations for the ATFM.

2.3. This meeting agreed to establish 12 flow management units (FMUs), which should work in a coordinated manner according to a common plan, and with the mission of ensuring an optimum traffic flow through the different areas where the demand might exceed the available ATC capacity in given moments.

2.4. Under these premises, the ATFM was managed in Europe for some years until the Ministers of Transport of the ECAC (European Civil Aviation Conference), in close coordination with ICAO and Eurocontrol, agreed in 1988 on the need to centralise the ATFM in order to improve efficiency and make better use of ATC capacity. Consequently, the European Air Navigation Planning Group (EANPG) developed the CTMO (Centralised Air Traffic Flow Management Organization)

3. ATFM objectives, principles and functions

3.1. The ATFM service had to be provided as a supplement to ATC, and should guarantee an optimum traffic flow to or through areas where traffic demand might exceed the available ATC capacity at some point in time. This optimum flow could be attained by maintaining a balance between traffic demand and capacity, in close coordination with operators and the ATCs involved.

3.2. Thus, the ATFM should meet the following objectives:

- Overload protection for the ATC.
- Integrated use of the existing ATC capacity.
- Maximum flexibility in the management of the different traffic flows.
- Rationalisation of traffic flows.
- Operate at the minimum level required so as not to affect the cost-benefit ratio.

3.3. In order to meet these objectives, the ATFM should be based on the following principles:

- Be at the disposal of all the States in the Region, adjusting to the requirements of Operators, ATC Units in the region and adjacent Units.
- Use traffic demand data obtained from a common and permanently updated database.
- The integrated database (IDB) must provide information based on operator plans (PFDs), constantly updated RPLs, and sporadic traffic and historical data, and be able to incorporate FPLs immediately upon receipt.
- Take measures sufficiently in advance to prevent overloads and minimise their effect on operators.
- Maintain close and continuous coordination with Flow Control Units (FMUs), Operators, and adjacent ATC Units.
- Must be handled by highly qualified and trained personnel.
- Must be available 24 hours a day to ensure proper distribution of ATC capacity.

3.4. The ATFM should be designed to fulfil the following functions:

- Obtain data on ATC infrastructure and the capacity of its systems.
- Obtain and analyse data on all scheduled flights within its area or region of influence.
- Have a consistent picture of traffic demand, compare it with the available capacity, and identify conflicting areas and periods.
- Coordinate capacity upgrades with ATS authorities, when appropriate.
- Define suitable measures for those areas where a capacity upgrade is not feasible.
- Periodically study the results of ATFM measures, for continuous improvement purposes.
- Apply a strict quality assurance control of the service provided.

- Have and secure the best means of communication among the different elements of the ATFM service, in order to ensure an efficient and effective performance of the system in terms of information distribution and reception.

4. ATFM activities

4.1. ATFM activities must be addressed to traffic flows or flight series, and to concrete flights and days. To that end, planning, strategy development, and day-to-day monitoring should be provided for.

4.2. Regarding the above, ATFM activities can be developed in three phases:

- Strategic: up to 48 hours before the day of operation
- Pre-tactical: within 48 hours prior to the day of operation
- Tactical: during the day of operation

4.3. Strategic phase

4.4. The strategic planning phase can be broken down into two parts:

- A continuous data collection and interpretation process, and a systematic and regular review of procedures and measures.
- An international coordination process to ensure the compatibility and efficiency of national and international requirements

4.4.1. Strategic planning has two main objectives:

- To identify imbalances between demand and capacity in ATC systems, whether in underutilised or saturated areas.
- To use said information to recommend measures leading to increased capacity or effective use of the existing capacity.

4.4.2. Regarding the above, a method that could be used for identifying imbalances between demand and capacity is comparing available traffic forecasts with known capacity data.

4.4.3. DEMAND data are obtained from different sources:

- Forecasts based on the integrated database (IDB) and adjusted to demand.
- Recent historical traffic data comparable to the one to be analysed (*e.g.*, the same day of the previous week or of some vacation period).
- Traffic trends provided by national authorities, user organisations (*e.g.*, IATA), etc.
- RPLs.
- Other related information (*e.g.*, air shows, major sport events, military manoeuvres, and, in general, extreme events or situations which might generate additional or an extraordinary demand which affects the available ATC capacity.

4.4.4. CAPACITY data are provided by the various ATCs. However, there should be close coordination between the Flow Control Units of each ATC and the centralised ATFM, to ensure that the available capacity is distributed in such a way as to meet the existing demand.

4.4.5. Regarding the above, consideration should be given to factors such as personnel availability forecasts, possible medium-term changes in ATC procedures, installation of new equipment, airport infrastructure works affecting runways or parking stands, etc.

4.5. **Pre-tactical phase**

4.5.1. Basically, the pre-tactical phase comprises the study of the demand for the day of operation (starting 48 hours before), and its comparison with the capacity available on that day, adjusting the Strategic Plan or adopting different measures when necessary.

4.5.2. At the end of the process, the agreed measures should be disseminated in a bulletin (ATFM Reporting Message) containing the restrictions, and which can be distributed through the AFTN, SITA, etc.

4.5.3. The tasks in this phase may include the following:

- Determining ATC capacity of the different areas, based on the particular situation that day.
- Estimating the existing demand.
- Preparing a demand/capacity comparative study.
- Studying those sectors where saturation is expected and the flows affected, estimating acceptance quotas to be applied according to the capacity of the system.
- Preparing a summary of the ATFM measures to be proposed.
- Making a last review on the day before the operation, and, in consultation with the affected ACCs, determining definitive AFTM measures, which will be published in the bulletin 12 hours before the affected operations take place.

4.5.4. Acceptance quotas may be established bearing in mind the following:

- They should be expressed as the number of flights over a given point, on a given period of time.
- At the points of entry of a given area, they should be in proportion to the demand foreseen for those same points during the period in question.
- Quotas established for long periods of time must be estimated periodically, preferably every day.
- It is advisable to conduct a study afterwards, to assess the impact of the measures and to adjust them inasmuch as possible, according to the information received by the different units making up the system, and to make the necessary tactical adjustments.

4.6. Tactical phase

4.6.1. The tactical activity is aimed at ensuring that the measures taken during the strategic and pre-tactical phases resolve the demand/capacity problems in the flows or areas of application, that the measures imposed are the minimum required and that the unnecessary measures have been eliminated, that ATC resources are used properly, and that maximum use is made of the existing capacity, without compromising safety.

4.6.2. It should also be noted that the existing delays are equitably distributed among operators.

4.6.3. In order to meet these objectives and comply with the above, the ATFM plan should be monitored in real time, in close contact with the ATC operation underway, where real-time access to data is critical.

4.6.4. At present, the main ATFM measures being applied in this tactical phase are the use of SLOTS and REROUTINGS, trying to avoid significant penalties to operators.

APPENDIX B

ASPECTS THAT COULD BE CONSIDERED FOR ATFM IMPLEMENTATION

1. Identification of the operational requirement

- Traffic congestion during “peak” periods and hours;
- Aircraft not operating at their optimum flight levels;
- Fuel burn.

2. Impact on airspace

- Optimization of the current structure of the CAR/SAM ATS Routes Network (if necessary);
- Flexible utilization of the airspace (prohibited, restricted and special-use airspaces) and civil/military coordination;
- Mixed operations (aircraft with different performances) in the same airspace;
- Availability of optimum flight levels;
- Need for a better airspace sectorization.

3. Impact on Air Traffic Services

- ATS standard and contingency Procedures;
- Automation level of the ACC, including the integration level and interoperability;
- Appropriate amended to the CAR/SAM Regional Supplementary Procedures;
- Training of the ATC personnel;
- ATC workload;
- Surveillance and communications coverage in some FIRs.

4. Impact on operations and airport services

- Delays in apron before to start the towing/taxing for departure;
- Delays for taxi and take off;
- Delays for taxi after landing and for the apron allocation.

5. Cost/Benefit analysis.

- Air traffic forecast;
- Traffic congestion reduction;
- Reduction in delays;
- Reduction of ATC workload;
- Increment of air operations safety;

- Greater availability of optimum flight levels;
- Fuel and time of flight savings;
- Financial feasibility.

6. Impact on Civil Aviation Administrations

- Implementation planning;
- Establishment of a method for air space safety assessment;
- Operational implementation.

Agenda Item 3: Review of the ATFM/TF Terms of Reference and Work Programme

Review of the Terms of Reference, Work Programme and Composition of the ATFM Task Force

3.1 The meeting recalled that GREPECAS/12 approved the terms of reference and work programme of the ATFM Task Force (ATFM/TF) as well as its composition, proposed by the ATM Committee to the ATM/CNS Subgroup. The different aspects having direct relationship with the implementation and that one way or another could modify the terms of reference and work programme of the task force, were examined.

3.2 On the other hand, the ICAO/UNDP Project RLA/98/003, through the Institutional Aspects Task Force, would be analyzing, among other issues related with institutional aspects, item d) of the ATFM/TF work programme "to examine institutional aspects involved in a multinational environment". The meeting was of the opinion that, notwithstanding the above, and while it was not necessary to review this matter, given the importance of this issue, it would be necessary that the task force take into consideration the institutional aspects, and proposed a modification to the corresponding text. Also, the group proposed to amend and put to the consideration of the ATM Committee the text of some other tasks.

3.3 When analysing its composition, note was taken on the interest of IATA to be part of the group, and consequently modified its composition. Taking into consideration the importance of the ATFM for CAR/SAM Regions, the meeting felt that other States and International Organizations should be part of the Task Force. Consequently, the meeting adopted the following:

Draft
Conclusion ATFM/1/3 Terms of reference, work programme and composition of the ATM Committee ATFM Task Force

To adopt the terms of reference, work programme and composition shown in **Appendix A** to this part of the report.

APPENDIX A

TERMS OF REFERENCE AND WORK PROGRAMME OF THE ATFM TASK FORCE

ATM-ATFM/400: To develop an Air Traffic Flow Management (ATFM) system with a view to its future implementation in the CAR/SAM Regions.

ATFM Task Force

1. Terms of reference

Carry out specific studies in order to determine and elaborate guidance material on an Air Traffic Flow Management (ATFM) system to ensure an optimum air traffic flow in the CAR/SAM Regions.

2. Work Programme

a) Review the documentation on air traffic flow management and the policies globally established;

b) Review the ATFM regional plans of other regions;

c) Review the existing ATFM national plans;

d) ~~Review~~ Consider the institutional aspects involved in a multinational environment;

e) Review the ATFM technical and operational aspects;

f) Identify the minimum requirements to implement ATFM;

g) Define the principles in which the ATFM CAR/SAM service will be based;

h) Evaluate different alternatives and strategies that may satisfy the future air traffic flow management in the CAR/SAM Regions;

i) Prepare ~~a draft of ATFM guidance material~~ the necessary documentation for the CAR/SAM Regions; and

j) Present not later than ATM/6 Committee ~~the guidance material~~ the documentation prepared for their approval.

3. Composition

Argentina, Brazil*, Chile, Colombia, Costa Rica, Mexico, Peru, United States, Uruguay, ~~and~~ COCESNA, IATA.

* Rapporteur: ~~Rolim Higinio~~ TBD

4. Task termination date

ATMC/6 Meeting

Agenda Item 4: Other matters

ATFM Seminar

4.1 The meeting considered of vital importance that ICAO, with the support of CAR/SAM States and International Organizations, organize a seminar in 2006 dealing with all aspects related with ATFM planning and implementation, formulating the following:

Draft
Conclusion ATFM/1/4 ATFM seminar

That ICAO, with the support of CAR/SAM States/Territories and International Organizations, organize a seminar in 2006, with the aim of examining all aspects related with ATFM planning and implementation.

APPENDIX A

LISTA DE TAREAS PARA LA IMPLANTACIÓN DEL SISTEMA ATFM EN LAS REGIONES CAR/SAM / CAR/SAM ATFM SYSTEM IMPLEMENTATION TASKS LIST				
ID	**Descripción Tarea/ Task Description**	**Inicio/ Start**	**Termino/ Finish**	**Nombre de Recursos/ Resource names**
1.0	**Asuntos Operacionales para la implantación del Sistema ATFM /Operational Issues for ATFM implementation system**			
1.1	Identificar necesidades operacionales / Identify Operational Needs			
	Desarrollar y actualizar el Concepto Operacional / Develop and update Operational Concept			
1.3	Definir espacio aéreo afectado/ Define airspace affected			
1.4	Definir planes de recolección de datos / Define data collection plan			
1.5	Recolección de datos para el análisis de ATFM / Data collection for ATFM analysis			
1.6	Definir y analizar escenarios para implantación del sistema ATFM / Define and analize of ATFM scenarios for implementation system			
1.7	Examinar factores operacionales entre demanda y capacidad de servicio asociada con la implantación/ Examine the operational factors between demand of service and capacity associated with implementation			
1.8	Determinar las herramientas requeridas / Determine required tools			
1.9	Desarrollar, la documentación internacional y regional necesaria (Manual de Procedimientos) / Develop, necessary international and regional documentation(Handbook procedures)			
1.10	Desarrollar las políticas y procedimientos ATFM / Develop ATFM policies and procedures			
1.11	Detallar los requerimientos necesarios incluyendo los parámetros de performance/Detail the necessary requirements, including the performance parameters			
1.12	Determinar los mensajes ATFM/ Determine the ATFM messages			
1.13	Proporcionar información para el análisis de Costo - Beneficio / Provide data to the Cost Benefit Analysis			
1.14	Preparar planes y material de capacitacion ATFM / Prepare plans and ATFM training material			
2.0	**Coordinación con Estados, Territorios, Organizaciones Internacionales e Industria involucrados / Coordination with adjoining States, Territories, International Organizations and Industry.**			
2.1	Publicar los Suplementos AIP/NOTAM necesarios / Publish necessary AIP Supplement/NOTAM			
2.2	Comunicarse con Estados, Proveedores ATS, Proveedores de comunicaciones y usuarios del espacio aéreo / Communicate with States, ATS Providers, Communications Service Providers and airspace users			
2.3	Diseminación de información para los Usuarios ATS / Information dissemination to ATS Users			
3.0	**Desarrollo de procedimientos para usuarios del espacio aéreo / Develop airspace users Procedures**			
3.1	Revisar planes de contingencia ATM / Review ATM contingency planning			
3.2	Revisión de practicas y procedimientos para la gestión de consumo de combustible y cuidado ambiental / Review of fuel and environmental management practices and procedures			

LISTA DE TAREAS PARA LA IMPLANTACIÓN DEL SISTEMA ATFM EN LAS REGIONES CAR/SAM / CAR/SAM ATFM SYSTEM IMPLEMENTATION TASKS LIST				
ID	**Descripción Tarea/ Task Description**	**Inicio/ Start**	**Termino/ Finish**	**Nombre de Recursos/ Resource names**
4.0	**Desarrollar procedimientos ATC / Develop ATC Procedures**			
4.1	Determinar necesidades para simulaciones / Determine need for simulations			
4.2	Armonizar requerimientos de los ANPs / Harmonise ANPs requirements			
5.0	**Realizar verificación del sistema / Perform system verification**			
5.1	Completar pruebas y evaluaciones de las herramientas ATFM y procedimientos de coordinación de la ATFM / Complete trials and evaluation of ATFM tool and coordination procedures with ATFM			
5.2	Realizar evaluación de la performance del sistema / Carry out measuring performance system			
5.3	Validacion del sistema / System validation			
6.0	**Decisión final de implantación / Final Implementation Decision**			
6.1	Revisar factores que afectan la decisión de implantación / Review all factors affecting implementation decision			
6.2	Declarar implantación operacional definitiva dentro de área definida / Declare full operational capability within defined area			
6.3	Desarrollar plan de seguimiento del Sistema ATFM posterior a la implantación / Develop Post- Implementation follow-up Plan for ATFM system			
7.0	**Monitorear performance del sistema / Monitor System Performance**			
7.1	Realizar monitoreo del sistema / Perform follow-on monitoring system			