



International Civil Aviation Organization

NORTH AMERICAN, CENTRAL AMERICAN AND CARIBBEAN OFFICE

**First Meeting of the North Atlantic/Caribbean ATS Routes Working Group (NAT/CAR WG/1)**

Miami, Florida, USA, 19-21 September 2006

NAT/CAR WG/1 - WP/04

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**Agenda item 3: Task List and Future Activities**

**ATM PERFORMANCE OBJECTIVES FOR THE NAT AND CAR REGIONS  
RELATED TO ICAO GLOBAL PLAN INITIATIVES (GPI)**

(Presented by the Secretariat)

**SUMMARY**

This Working Paper presents a proposal to develop an action plan for the WATRS airspace redesign project based on performance objectives in accordance with the new ICAO global plan initiatives (GPI).

**References:**

- Second Amendment to the Global Air Navigation Plan for the CNS/ATM systems (Doc 9750)
- Report of the Fifth All Planning and Implementation Regional Group (ALLPIRG/5) Meeting (Montreal, Canada, 23-24 March, 2006)
- Summary of Discussions of the Regional North American/Caribbean (NAM/CAR) Air Traffic Management (ATM) Meeting (Santo Domingo, Dominican Republic, 19-21 April 2006).

**1. Introduction**

1.1 The Regional NAM/CAR ATM Meeting noted that the Global Plan Initiatives (GPIs) were developed by the Air Navigation Commission aiming to bring near and medium term benefits to the ATM community, taking advantage of currently available aircraft capabilities and ATC infrastructure and technology.

1.2 The Meeting agreed on Recommendation ATM - 1/1, which deals with *Implementation of Work Programmes in support of strategic performance objectives*, adopting a performance-based approach for regional planning and implementation on ***Optimization of the ATS route structure; Improve demand and capacity balancing; Enhance civil/military coordination and co-operation***. The strategic performance objectives related to the WATRS plus project appear in **Appendix** to this Working Paper.

## **2. Discussion**

2.1 To the extent possible, airspace should be structured free from operational discontinuities, inconsistencies and differing rules and procedures. In accordance with this, States should encourage user-preferred routes leveraging the capability of aircraft. When designing and implementing airspace changes, account needs to be taken of the fleet capabilities among airspace users within each given airspace.

2.2 Airspace should not be designated purely as civil or military, but rather as a continuum in which all user requirements are accommodated to the greatest extent possible. Flexible use of airspace (FUA) should result in the removal of large tracts of permanent or routinely restricted airspace or special use airspace. To accommodate specific individual airspace requirements, blocking airspace of certain dimensions should be done strictly on a transient basis.

2.3 Collaborative-decision-making is an extension of the principle of flexible use of airspace and includes airspace users in the decision making process with respect to tactical assessment of the use of reserved airspace and requirements for transit times of special use airspace. Collaboration with airspace users will permit appropriate procedures and/or solutions to be identified in accordance with available aircraft capabilities.

2.4 The future strategy for RNAV/RNP implementation between city pairs including performance-based navigation (PBN) for en-route, terminal and approach flight phases should take into account the new ICAO provisions.

2.5 The ICAO Strategic Objectives are applicable to the regional and global ATM community, integrating work programmes and terms of reference of the different intra-regional Working Groups for future harmonized planning and implementation works.

## **3. Suggested action**

3.1 The Meeting is invited to:

- a) note the information contained in this Working Paper;
- b) develop an action plan for the WATRS plus project based on ATM performance objectives indicated in **Appendix** to this Working Paper; and
- c) agree other actions as necessary.

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## **APPENDIX**

### **ATM PERFORMANCE OBJECTIVES**

#### **1) Optimize the ATS route structure in both terminal and en-route airspace**

##### ***Benefits***

The benefits of this performance objective are:

- reductions in fuel consumption;
- ability of aircraft to conduct flight more closely to preferred trajectories;
- increase in airspace capacity;
- facilitate utilization of advanced technologies (e.g., FMS based arrivals) and ATC decision support tools (e.g., metering and sequencing), thereby increasing efficiency.

##### ***Strategy***

###### **En-route airspace**

In the near term: (mid 2008)

- analyze the en-route ATS route structure and implement all identifiable improvements;
- implement all remaining regional requirements (e.g. RNP 10 routes); and
- Finalize implementation of WGS-84.

In the medium term (2011)

- develop a strategy and work programme to design and implement a trunk route network, connecting major city pairs in the upper airspace, on the basis of RNAV/5, taking into account interregional harmonization;
- monitor implementation progress.

###### **In terminal airspace**

- develop a regional strategy and work programme for implementation of optimized standard instrument departures (SIDs), standard instrument arrivals (STARs), instrument flight procedures, holding, approach and associated procedures, on the basis of PBN and, in particular RNAV/1 and 2; and
- progress and monitor implementation.

##### ***GPIs***

The above performance objective is supported by GPI/5: performance-based navigation, GPI/7: dynamic and flexible ATS route management, GPI/8: collaborative airspace design and management, GPI/10: terminal area design and management, GPI/11: RNP and RNAV SIDs and STARs and GPI/12: FMS-based arrival procedures.

## **2) Improve demand and capacity balancing**

### ***Benefits***

The benefits of this performance objective are:

- reduction in weather and traffic induced holding leading to reduced fuel consumption;
- improved and smoother traffic flows;
- improved predictability;
- improved management of excessive service demand at ATC sectors and at aerodromes;
- improved operational efficiency;
- enhanced airspace capacity; and
- improved safety management.

### ***Strategy (2008)***

- identify key stakeholders (ATC service providers, air operators, military, airport authorities, aircraft operators and relevant International Organizations) for coordination and cooperation;
- identify and analyze current traffic flow problems and develop methods for improving efficiencies gradually as necessary, through:
  - improved airway structure (unidirectional routes), communications, surveillance, ATS capacity, aerodrome capacity and letters of agreement;
- define required elements of common situational awareness:
  - common traffic display, common/weather displays (Internet), communications (teleconferences, web), daily teleconference advisories;
- develop methods to establish demand/capacity estimates;
- develop a regional strategy and work programme for implementation of ATFM; and
- monitor implementation progress

### ***GPIs***

The above is supported by GPI/6: air traffic flow management.

## **3) Enhance civil/military coordination and co-operation**

### ***Benefits***

The benefits of this performance objective are:

- make available military restricted airspace more hours of the day so that aircraft can fly on their preferred trajectories;
- increase airspace capacity;
- allow a more efficient ATS route structure;
- ensure safe and efficient action in the event of unlawful interference; and
- improve search and rescue services.

***Strategy (2008)***

- develop guidance material on civil/military coordination and co-operation to be used by States/Territories with national policies, procedures and rules;
- establish civil/military coordination bodies;
- arrange for permanent liaison and close cooperation between civil ATS units and appropriate air defense units;
- conduct a regional review of special use airspace;
- develop a regional strategy and work programme for implementation of flexible use of airspace in a phased approach beginning with more dynamic sharing of restricted airspace while working towards full integration (2012) of civil and military aviation activities; and
- monitor implementation progress

***GPIs***

The above is supported by GPI/1: flexible use of airspace.

**4) Improve ATM situational awareness**

***Benefits***

The benefits of this performance objective are:

- enhanced traffic surveillance;
- enhanced collaboration between flight crew and the ATM system;
- improved collaborative decision-making through sharing electronic aeronautical data information;
- improved available electronic terrain and obstacle data in the cockpit;
- reduction of workload for both pilots and controllers;
- improved operational efficiency;
- enhanced airspace capacity;
- improved implementation on a cost-effective basis;
- reduction of the number of controlled flight into terrain related accidents; and
- improved safety management.

***Strategy  
Near term (2010)***

- identify parties concerned
- identify the automation level required according to the ATM service provided in airspace and international aerodromes, assessing
  - operational architecture design,
  - characteristics and attributes for interoperability,
  - data bases and software, and
  - technical requirements;
- improve ATS Interfacility communication
- implement flight plan data processing system and electronic transmission tools
- implement radar data sharing programs where benefits can be obtained

- develop situational awareness training programmes for pilots and controllers
- implement ATM surveillance systems for situational traffic information and associated procedures
- implement ATS automated message exchanges, as required
  - FPL, CPL, CNL, DLA, etc.
- implement automated radar handovers, where able;
- implement ground and air electronic warnings, as needed
  - Conflict prediction
  - Terrain proximity
  - MSAW
  - DAIW
  - Surveillance system for surface movement
- implement data link surveillance technologies and applications: ADS, CPDLC, AIDC, as required

***Strategy***

***Medium term (2015)***

- implement additional/advanced automation support tools to increase sharing of aeronautical information
  - ETMS or similar
  - MET information
  - AIS/NOTAM dissemination
  - Surveillance tools to identify airspace sector constraints
  - A-SMGC in specific Aerodromes, as required
- implement teleconferences with ATM stakeholders
- monitor implementation progress

***GPIs***

The above is supported by GPI/1: flexible use of airspace; GPI/6: air traffic flow management; and GPI/7: dynamic and flexible ATS route management; GPI/9: Situational awareness; GPI/13: aerodrome design and management; GPI/14: runway operations; and GPI/16: decision support and alerting systems; GPI/17: implementation of data link applications; GPI/18: aeronautical Information; GPI/19: meteorological systems.