



SAM/IG/4
WP/09
30/09/09

**International Civil Aviation Organization
South American Regional Office**

**FOURTH WORKSHOP/MEETING OF THE SAM IMPLEMENTATION GROUP (SAM/IG/4)
REGIONAL PROJECT RLA/06/901**

Lima, Peru, 19 to 23 October 2009

Agenda Item 2: Optimization of the ATS routes structure in Terminal and en-route airspace and implementation of performance based navigation (PBN) in the SAM Region.

FLEXIBLE USE OF AIRSPACE (FUA)

(Presented by Roberto Arca Jaurena, Uruguay)

Summary

This working paper presents information on the Project Draft, regulatory framework for regulating the activities related to the special use of airspace that involves the coordination of civilian and military operations developed by Uruguay for approval .

References:

- 35th Meeting of the ICAO Assembly
- GPI-1 Global Air Navigation Plan del (Doc.9750 OACI)
- GREPECAS
- SAMIG/2 Meeting

1 Background

1.1. Flexible use of airspace is a concept of airspace management, described by the International Civil Aviation Organization (ICAO), serving optimisation, balance and fairness in the use of airspace between civil and military users, which is facilitated through strategic coordination and dynamic interaction, and which is based on the resolutions of the 35th Meeting of the ICAO Assembly, the initiative GPI-1 Global Air Navigation Plan (ICAO Doc.9750), GREPECAS, and the National Air Navigation Plan that is being developed in DINACIA.

2 Discussion

2.1 There are activities that require the reservation of a volume of airspace for their exclusive or special use (SUA) for defined periods of time, due to the characteristics of its flight profile or to the risks involved in the operations to be performed in such volume and to the need to effectively and securely separate them from other types of aviation activities.

2.2 Also, the concept of flexible use of airspace includes management functions of same - strategic management, pre-tactical and tactical – independent among them, but closely related and that shall be carried out in coordination to ensure an efficient use of airspace.

2.3 On the other hand, the effectiveness of civil-military coordination procedures must be based on rules and procedures for an efficient use of airspace by all users.

2.4 The current FUA draft regulation does not include military operations and training that must be considered, when relevant, in Letters of Operational Agreement between military authorities and Air Traffic Services (ATS).

2.5 In relation to the above, it is understood the need to develop a regulatory framework for the activities related to the special use of airspace, which will contribute to the flexible use of it, and that is shown in **Appendix A** to this working paper, as a project draft.

3. **Suggested Action**

3.1 The meeting is invited to analyze the Regulatory Project Draft for the flexible use of airspace, set out in Appendix A to this working paper, and if deemed appropriate:

- a) suggest amendments to it to improve its aim
- b) adopt it as a guide or model to be used in SAM Region.

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APPENDIX A

FLEXIBLE USE OF AIRSPACE

DINACIA Regulation Number

**Version 0.4
September 2009**

**Prepared by:
Air Traffic Technical Chief**

**Reviewed by:
Air Traffic Bureau**

DINACIA

Document Control

[illegible]

National Regulations on the Flexible Use of Airspace**FLEXIBLE USE OF AIRSPACE**

Regulation number **xxxxxx** establishing common standards for the flexible use of airspace

CONSIDERING the need to regulate the flexible use of airspace under national responsibility in order to ensure compliance with ICAO recommendations with a view to increasing airspace capacity and improving the efficiency and flexibility of aircraft operations.

WHEREAS:

- (1) the flexible use of airspace is an airspace management concept described by the International Civil Aviation Organization (ICAO) that seeks optimisation, balance, and equity in the use of airspace by civil and military users, through strategic coordination and dynamic interaction, and based on the resolutions of the 35th meeting of the ICAO Assembly, the GPI-1 initiative of the Global Air Navigation Plan (ICAO Doc.9750), GREPECAS, and the National Air Navigation Plan.
- (2) these regulations do not include military operations and drills, which will be addressed in due time in Letters of Operational Agreement between military authorities and air traffic services (ATS).
- (3) national military requirements must be taken into account to ensure that all airspace users fully and consistently apply the concept of flexible use of airspace.
- (4) the flexible use of airspace must include airspace in the high seas within the jurisdiction of the Montevideo FIR. Therefore, it must be applied without detriment to the rights and obligations of member States under the Convention on International Civil Aviation (Chicago Convention), of 7 December 1944, and its Annexes, or the United Nations Convention on the Law of the Sea, of 1982.
- (5) there are activities that require that a certain volume of airspace be reserved for their exclusive or special use (SUA) during certain periods of time, due to their flight profile characteristics or the risks involved in the operations to be carried out in said volume, and the need to separate them effectively and safely from other types of aeronautical activities.
- (6) the effective and harmonised application of the flexible use of airspace throughout the Montevideo FIR requires precise and dynamic standards for civil-military coordination that take into account the needs of all users and the nature of their various activities.
- (7) the efficacy of civil-military coordination procedures must be based on standards and procedures that allow for an efficient use of airspace by all users.
- (8) the flexible use of airspace concept includes airspace management functions--strategic, pre-tactical, and tactical management--that are independent but closely related, and that must be performed in a coordinated manner to ensure an efficient use of airspace.
- (9) technical cooperation programmes within the regular ICAO programme for air traffic management that are being implemented in the ICAO SAM Region must gradually achieve

consistency among airspace management, air traffic flow management, and air traffic service functions.

- (10) when various aeronautical activities with different needs are carried out in the same airspace, their coordination must seek safety of flight operations and optimum use of available airspace.
- (11) timely distribution and accuracy of the information sent to civil and military controllers regarding airspace status and specific air traffic situations have a direct impact on the safety, efficacy, and efficiency of operations.
- (12) timely access to updated information on airspace status is vital for all parties willing to use available airspace structures when preparing or modifying their flight plan.
- (13) the periodic assessment of airspace utilisation is an important way of increasing the confidence of civil and military service providers and users, as well as an indispensable tool for improving airspace design and management.
- (14) the need for an adjustment period to meet the needs of coordination between civil and military air traffic service units and military control units must be taken into account.

THE DINACIA ENACTS THE FOLLOWING REGULATIONS

REGULATIONS

Article 1

Purpose

- 1.1 These Regulations constitute a regulatory framework that strengthens and harmonises the application of the flexible use of airspace concept in Uruguayan airspace, and establishes standards to support cooperation between civil and military services responsible for air traffic management, which operate in the airspace under the jurisdiction of the Eastern Republic of Uruguay.

Article 2

Definitions

- a) "airspace management cell" ("AMC"), a cell responsible for day-to-day airspace management.
- b) "airspace reservation", a defined volume of airspace temporarily reserved for exclusive or specific use by certain user categories.
- c) "airspace restriction", a defined volume of airspace within which activities dangerous to the flight of aircraft may exist at specified times ("danger area"); or an airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions ("restricted area"); or an airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited ("prohibited area").
- d) "airspace structure", a defined volume of airspace designed to guarantee aircraft operations under optimum conditions of efficiency and safety.
- e) "air traffic services unit" ("ATS unit"), the unit, whether civil or military, responsible for the provision of air traffic services.
- f) "civil-military coordination", coordination between the civil and military parties that have decision-making power, to carry out coordinated actions to ensure the efficiency and safety of air operations in the airspace under their responsibility.
- g) "military control unit", any fixed or mobile military unit responsible for air traffic operations or other activities that, by nature, may require reservation or restriction of the airspace.
- h) "intention of flight", the flight path and related data that describe the foreseen path of a flight to its destination, with the updates made at any time.
- i) "flight path", the path of an aeroplane through the air, defined in three dimensions.
- j) "real time ", the effective time during which a process or event takes place.

- k) "separation", spacing between aircraft, levels, or tracks.
- l) "users", the civil or military aircraft operating in the air, as well as any other parties that need to use the airspace.

Article 3

Governing Principles

3.1 The concept of flexible use of airspace will be based on the following principles:

- a) coordination between civil and military authorities will be organised at the strategic, pre-tactical, and tactical level, through the establishment of Letters of Operational Agreement and/or special procedures for a defined activity, aimed at increasing safety and airspace capacity and enhancing efficacy and flexibility of air operations;
- b) consistency among air traffic management, air traffic flow management, and air traffic service functions must be established and maintained in order to ensure an efficient planning, distribution to all users and use at the three levels of airspace management (strategic, pre-tactical, and tactical);
- c) airspace reservation for exclusive or specific use by certain user categories will be temporary and only for limited periods of time, based on actual use, and will cease as soon as the activity that gave rise to it ceases, and will follow the procedures established in ICAO documents and Annexes, as well as those prescribed in the Letters of Operational Agreement and/or special procedures;
- d) air traffic service units and users will use available airspace in the best possible way.

Article 4

Strategic Airspace Management (Level 1)

4.1 Civil and military units that provide air traffic services will perform the following functions:

- a) ensure the application of the flexible use of airspace concept at the strategic, pre-tactical, and tactical level;
- b) review user needs regularly;
- c) validate the activities that require airspace reservation or restriction;
- d) define temporary airspace structures and procedures that offer multiple reservation and route options;

- e) establish criteria and procedures for the establishment and use of adjustable lateral and vertical limits for the airspace needed to accommodate flight path variations and short-term flight changes;
 - f) assess national airspace structures and the route network in order to plan flexible airspace structures and procedures;
 - g) determine the specific conditions under which the responsibility for separating civil from military flights will fall upon civil and military air traffic service units or upon military control units;
 - h) establish and offer users airspace structures in close cooperation and coordination with neighbouring member States when the corresponding airspace structures have a significant impact on cross-border traffic or on the boundaries of flight information regions, with a view to ensuring an optimum use of airspace by all users;
 - i) establish consultation mechanisms between individuals or bodies and all the parties and organisations involved, in order to properly meet user needs;
 - j) assess and review periodically the procedures and operations involved in the flexible use of airspace;
 - k) establish mechanisms to store data regarding requests, assignment, and actual use of airspace for their subsequent analysis and for the planning of activities.
- 4.2 Both civil and military authorities that share the responsibility for, or participate in, airspace management will perform the functions listed in item 1, through close civil-military coordination as defined in a Letter of Operational Agreement.
- 4.3 The Letter of Operational Agreement will establish the agreements and procedures foreseen for a flexible use of airspace, and will specify, *inter alia*, the following:
- a) the horizontal and vertical limits of the airspace involved;
 - b) the classification of the airspace available for use by civil air traffic;
 - c) the units or authorities responsible for airspace transfer;
 - d) the conditions for airspace transfer to the ATC unit involved;
 - e) the conditions for airspace transfer from the ATC unit involved;
 - f) periods of airspace availability;
 - g) any limitations in the use of the airspace involved; and
 - h) any other relevant procedures or information.

Article 5

Pre-tactical Airspace Management (Level 2)

- 5.1 If necessary, military and civil units will establish an airspace management cell (AMC) for airspace assignment, in keeping with the concepts, conditions, and functions described in Article 4, item 1. This AMC will also comply with the Letter of Operational Agreement and/or the temporary special procedures agreed upon.
- 5.2 Civil and military units will guarantee the introduction of appropriate support systems that will allow the airspace management cell to manage airspace assignment operations and give timely notice of airspace availability to all users involved, airspace management cells, air traffic service providers, and all the corresponding parties and bodies.

Article 6

Tactical Airspace Management (Level 3)

- 6.1 Civil and military units will guarantee the establishment of civil-military coordination procedures, as well as communication channels between air traffic service units and military control units for the exchange of airspace data with a view to real-time activation, deactivation, and redistribution of the airspace assigned at the pre-tactical level.
- 6.2 The DINACIA, through the *Dirección de Circulación Aérea* (Air Traffic Bureau) and the respective military command, will ensure that the relevant military control units and air traffic service units inform each other, in a timely and efficient manner, of any change in the planned airspace activation, and notify all users involved of the effective airspace status.
- 6.3 The DINACIA, through the *Dirección de Circulación Aérea* (Air Traffic Bureau) and the respective military command, will promote the introduction of coordination procedures and support systems between air traffic service units and military units that carry out activities in the airspace, in order to ensure a safe management of the interaction between civil and military flights.
- 6.4 The DINACIA, through the *Dirección de Circulación Aérea* (Air Traffic Bureau) and the respective military command, will ensure the establishment of coordination procedures between civil and military air traffic service units to permit direct communication of relevant information to address concrete traffic situations in the same volume of airspace in which civil and military controllers provide services. The relevant information will be made available, especially when so required for safety reasons, to civil and military controllers and military control units through prompt exchange of flight data, including the position and intention of flight of the aircraft.

Article 7

Safety Assessment

- 7.1 In order to maintain and improve current safety levels, the DINACIA, through the *Dirección de Circulación Aérea* and the respective military command, will ensure that, within the safety management process and before introducing any change in the implementation of flexible use of airspace, a safety assessment will be conducted, including the determination of dangerous situations and risk analysis and mitigation.
- 7.2 In this sense, a risk analysis according to SMS procedures can be conducted.

Article 8

Reports

- 8.1 In its annual reports on the application of the flexible use of airspace, the DINACIA, through the *Dirección de Circulación Aérea* and the respective military command, will provide information for the assessment of the operation of the agreements, procedures, and support systems established at the strategic, pre-tactical, and tactical level of airspace management.
- 8.2 The assessment will cover safety, airspace capacity, efficacy, and flexibility of aircraft operations of all users, and may refer to:
- a) issues encountered during the application of these Regulations, measures taken, and changes required,
 - b) the results of inspections, reviews, and national safety audits,
 - c) the cooperation provided by DINACIA, through the *Dirección de Circulación Aérea* and the respective military command, in terms of airspace management and, especially, regarding the establishment and management of cross-border airspace and cross-border operations,
 - d) SMS analysis.

Article 9

Assurance of compliance

- 9.1 The DINACIA, through the *Dirección de Circulación Aérea*, and the respective military command, will monitor compliance with these Regulations through periodic assessments, studies and safety audits.

Article 10

Entry into Effect

- 10.1 These Regulations will enter into effect on the day after their publication in the official newspaper of the ROU.
- 10.2 Article 6 will become effective 6 months after the effective date of these Regulations.
- 10.3 These Regulations will be mandatory in all of their elements, and directly applicable to civil and military units that use the airspace under the jurisdiction of the Eastern Republic of Uruguay.

Signed by DINACIA
