International Civil Aviation Organization
South American Regional Office
Third SAM Workshop/Meeting on ATS Routes Network Optimisation (SAM ATSRO/3) - RLA/06/901
Lima, Peru, 4 to 8 July 2011

Agenda Item 1: Review of the ATS routes network optimisation programme

RESULTS OF THE IMPLEMENTATION OF VERSION 1 AND LEASONS LEARNED

(Presented by the Secretariat)

Summary

This working paper presents information about the implementation of Version 1 of the ATS route network since the SAM/IG/1 meeting, and describes some aspects that could be improved based on the experience acquired. It also addresses other matters that shall be taken into account for the implementation of Phase 3 of the SAM ATS route network optimisation programme, which involves the implementation of Version 2 of the ATS route network.

References: • SAM/IG meeting reports • SAM ATS route network optimisation programme	
ICAO Strategic Objectives:	***A – Safety*** ***C – Environmental protection and sustainable development of air transport***

1 Background

1.1 As may be recalled, the SAMIG/1 meeting (Lima, Peru, 21-25 April 2008) assessed the activities carried out in the South American Region for the optimisation of the ATS route network, acknowledging the great work done by the Region since 2001. In the process, it reviewed and implemented new RNAV routes proposed by the States, Territories, International Organisations, and IATA with a view to making the necessary modifications to the RNAV route network, by reducing some paths leading to a seamless transition between the en-route flight phase and the terminal control area (TMA).

1.2 Consequently, and considering that the optimisation of the ATS route structure in terminal (RNAV SIDs/STARs) and en-route (RNAV) airspace and the implementation of RNP approaches were related to **Result 1.1 of Immediate Objective N° 1 of Project RLA/06/901**, *Implementation of performance-based navigation (PBN),* the meeting agreed to proceed with the review, implementation, modification or elimination of routes in the SAM Region, in order to continue optimising the SAM ATS route structure, and to develop a national RNAV route implementation programme compatible with the RNAV implementation programme of the Region.

1.3 The SAM/IG/2 meeting (Lima, Peru, November 2008) deemed it advisable to study the

feasibility of an ATS route network that responded to the new aviation requirements and that took into account the new performance-based navigation operational concept. It also agreed that the diversity of scenarios in the Region would make this a very complex task that should be supported by Regional Project RLA/06/901. The Secretariat started the corresponding proceedings to include the feasibility study for the optimisation of the SAM ATS route network as an objective of said Project.

1.4 The SAM/IG/3 meeting took note of, and approved, the feasibility study for the optimisation of the ATS route network in the South American Region that was presented, and which was aimed at:

a) establishing the planning criteria used for the assessment of the SAM ATS route network;

b) analysing and presenting a general diagnosis of the SAM ATS route network; and

c) proposing a SAM ATS route network optimisation programme, by phases, for the development of a methodology for modifying said route network in order to achieve gradual improvements in the regional airspace structure.

1.5 The SAMIG/4, 5 and 6 meetings executed the action plan of Phase 2 of the optimisation programme, involving the implementation of Version 1 of the ATS route network, which was satisfactorily completed in March 2011.

2 Discussion

2.1 As may be noted, the Region has made an extraordinary effort to improve the airspace structure and continues in this process through the implementation of RNAV 5 on 20 October 2011, which completes Phase 1 of the ATS route network optimisation programme. Now the Region is focusing on the implementation of Phase 3 of the programme, which consists in the implementation of Version 2 of the ATS route network.

2.2 During the implementation of Version 1 of the ATS route network, some difficulties and other aspects were identified that should be taken into account when analysing Version 2 of the ATS route network, as listed below:

a) The route network should fully respond to all the requirements of users (civil, military, general aviation, UAS, etc.), and should be established in such a way as to allow most flights to operate direct routes or as close as possible to them, between their points of origin and destination.

b) Optimum capacity must be achieved, taking into account the need to reduce the complexity of airspace structure.

c) Better airspace sectors should be achieved in order to optimise ATC capacity, including the possibility of delegating ATS functions.

d) It should be possible to reduce controller workload through airspace reorganisation and partitioning in sectors as necessary.

e) Define the type of route (unidirectional/bidirectional) and the direction of unidirectional routes, taking into account the need for a more efficient partitioning in sectors.

f) Resolve civil/military coordination deficiencies to ensure the efficiency of the route network.

g) Permit the application of the flexible use of airspace (FUA) concept to make sure that the requirements of all airspace users are met.

h) Permit integration with the State domestic route network.

i) Eliminate or reduce points of congestion, where possible.

j) Maintain the number of ATS routes as low as possible, always taking into account traffic demand in relation to ATC capacity, and the possibility of applying direct routes.

k) Keep the number of crossings as low as possible, and where crossings are necessary, they should be planned so as to avoid congested sectors.

l) Avoid redundant ATS routes.

m) Consider using unidirectional routes, especially in areas where the interaction of climbing/descending traffic is a limiting factor.

n) Consider the application of parallel routes in areas where there is a need to increase airspace capacity, using RNAV 5.

o) States should avoid isolated actions aimed at restructuring of airspace or domestic ATS route networks, which might have a significant impact on traffic beyond the area under the jurisdiction of the State concerned.

p) Administrations should comply with the dates agreed for publication of amendments to their respective AIPs; otherwise, the implementation of the route network on the agreed date could be compromised, thus creating a safety hazard.

q) The working group on ATS routes should set a target date, duly in advance, for receiving optimisation proposals, thus enabling States and users to duly prepare their implementation plans.

3. **Suggested action**

3.1 The Meeting is invited to:

a) take note of the information provided in this working paper; and

b) take into account the lessons learned in the previous process, as well as the aspects set forth in paragraph 2.2 of this paper, in order to improve the action plan for the implementation of Version 2 of the ATS route network.

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