AP/ATM/3
WP/2
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International Civil Aviation Organization
UNDP/ICAO Regional Project RLA/98/003
Transition to the CNS/ATM Systems in the CAR and SAM Regions

Third Meeting/Workshop of Air Traffic Management (ATM) Authorities and Planners
(Lima, Peru, 20.24 May 2002)

Agenda Item 1: Evaluation of pre-operational trials and demonstrations in RNAV routes UT 410 (Buenos Aires-Miami), UT 655 (Sao Paulo-Los Angeles) and UT 776/UT 419 (Sao Paulo/Rio de Janeiro-New York) for their definitive implementation.

Evaluation of pre-operational trials and demonstrations

(Presented by the Secretariat)

Summary

This working paper offers some comments on the initial results of the pre-operational trials and demonstrations being carried out on routes UT 410, UT 419/UT 776 and UT 655.

References:

- Report of the Second Meeting/Workshop of ATM Authorities and Planners of the CAR/SAM Regions
- Reports presented by the States involved in the pre-operational trials and demonstrations.
- Project RLA/98/003 "Transition to the CNS/ATM Systems in the CAR/SAM Regions".

1 Introduction

1.1 In accordance with the planning carried out by the CAR/SAM Regional Planning and Implementation Group (GREPECAS) and subsequently endorsed by the Third CAR/SAM RAN Meeting, the decision was made to conduct pre-operational trials and demonstrations for long-haul flights between city pairs. This would permit the gradual introduction of CNS/ATM elements in the CAR/SAM Regions and the use of the avionics already installed in the aircraft, thereby allowing users to obtain substantial savings in flight time and fuel use.

1.2 The Second Meeting of Air Traffic Management Authorities and Planners was held in Lima, Peru from 14 to 18 May, 2001, within the framework of Project RLA/98/003 "Transition to the

CNS/ATM Systems in the CAR/SAM Regions". It was agreed at that Meeting, among other things, to conduct pre-operational trials and demonstrations on RNAV routes UT 410 (Buenos Aires-Miami), UT 419/UT 776 (Sao Paulo-Rio de Janeiro/New York) and UT 655 (Sao Paulo-Los Angeles).

1.3 In order to comply with the Implementation Programme for trials and demonstrations on the cited routes, an Action Plan was drawn up which established the prerequisites and activities to be accomplished under the responsibility of the parties involved (States, users, IATA and ICAO).

2 Analysis

2.1 In general, the following main shortcomings were found:

a) Not enough Standard Instrument Departure and Arrival Routes (SID/STAR) have been established to make it possible to enter or leave routes UT 410 and UT 655 from intermediate airports.

b) Last minute changes in the trajectories have been made unilaterally during the co-ordination stage prior to the beginning of the trials and demonstrations, creating confusion among those involved regarding the identification of those trajectories and their significant points and geographic coordinates. To avoid a repetition of this situation, the trajectories agreed during the meetings should be maintained, and, if changes are needed, all of those involved should be notified appropriately and duly in advance.

c) Different levels of precision were used to indicate the degrees, minutes and seconds in the publications of geographic coordinates put out by the States. The same thing happened during the co-ordination process to establish the definitive coordinates of significant points along the respective trajectories. In this respect, during the process of establishing the definitive geographic coordinates, a single level of precision should be agreed upon, bearing in mind that Annex 4, Chapter 8 – Area Chart stipulates that degrees, minutes and seconds should be used.

2.2 RNAV UT 655 Route (Sao Paulo-Los Angeles)

2.2.1 Pre-operational trials and demonstrations were originally scheduled in the Action Plan to start on 4 October 2001. Generally speaking, once co-ordination among the parties resolved some difficulties, trials and demonstrations finally started on 1 November 2001, with no major problems.

2.2.2 All of the FIRs involved in route UT 655 complied with exchanging the respective Appendices to the Letters of Agreement, in which they agreed to apply a 10-minute MNT and/or 80-NM RNAV longitudinal separation minimum between aircraft flying at the same level.

2.3 RNAV route UT 410 (Buenos Aires-Miami)

2.3.1 The need for further co-ordination, especially with regard to the geographic coordinates of certain significant points, made it necessary to postpone the implementation of this route until 1 December 2001, which was accomplished with no major problems.

2.3.2 According to the information collected, except for some FIRs involved in route UT 410 which complied with including the application of a 10-minute MNT and/or 80-NM RNAV longitudinal separation minimum as an Appendix to their corresponding Letters of Agreement, a minimum longitudinal separation of 15 minutes was maintained on part of the path between aircraft flying at the same level.

2.4 RNAV routes UT 776 (Sao Paulo/New York) and UT 419 (Rio de Janeiro/New York)

2.4.1 The minimum requirements for the trials and demonstrations included providing air traffic control services along all the routes. For this reason, the AP/ATM2 meeting formulated Conclusion 2/7 – Supplementary measures to the Trials and Demonstrations on Routes UT 776 / UT419, which stated under a) that Guiana committed itself to provide Air Traffic. Control Services in the Georgetown FIR as of September 2001 in order to enable route UT776/UT419 to become an ATS controlled route along its full length.

2.4.2 However, some delays in the implementation of the Guiana ACC, which was finally accomplished on 21 March 2002, meant that the implementation of routes UT776 and UT 419 had to be postponed to 11 July 2002.

2.4.3 In this connection, the Secretariat wishes to underscore and congratulate the Guiana Administration for its major managerial and economic efforts to implement the ACC, which clearly show its determination to reach the goals regarding regional CNS/ATM implementation.

3 Conclusion

3.1 In general, all of the parties involved in routes UT 410 and UT 655 have complied with regularly sending in their reports and comments with respect to the conduction of trials and demonstrations on the cited routes.

3.2 UT 655: According to the information provided by IATA and the States, the pre-operational trials and demonstrations on the route were carried out without any operational difficulty, and all the parties complied with the steps that had been identified for its successful implementation, including use of the 10-minute MNT and/or 80-NM RNAV longitudinal separation minimum.

3.3 UT 410: Use of the 10-minute and/or 80-NM RNAV separation minimum proved impossible along the entire route, thereby affecting efficient airspace use. Nonetheless, it is necessary to point out that the Multilateral NNW1 Meeting held in Lima on 8 to 12 April 2002, with the participation of Bolivia, Brazil, Colombia and Peru, approved its application in international ATS routes that cross the boundaries of their respective FIRs as of 13 June 2002.

3.4 UT776 / UT419: Inasmuch as Guiana has restructured its airspace and implemented the Guiana ACC on 21 March 2002, pre-operational trials on these routes are scheduled to start on **11 July 2002.** As a result, the new dates for the activities specified by the AP/ATM/2 Meeting to be carried out

under the responsibility of the States/Organisations, Users, IATA and ICAO, are those that appear in **Appendix A** to this working paper.

3.5 It should also be noted that the trajectories and significant points of UT 776, which had been established by the AP/ATM/2 Meeting and which appear in the report of said meeting as Appendix C to the Report on Agenda Item 3, have been modified as a result of the following:

a) A request made by the aeronautical authority of the United States that all aircraft entering the San Juan FIR by route UT 776, following the V C Bird VOR/DME, continue along present route A 312 as far as GRANN and then by route A 523 to the JFK VOR/DME.

b) Changes in air circulation in the Brasilia FIR and Sao Paulo TMA as of **11 July 2002**, as reported by Brazil.

3.6 In keeping with the above, the final trajectories of the two routes are those shown in **Appendix B** to this working paper.

4 Suggested action

4.1 The meeting is invited to take note of the information provided in this working paper in order to:

a) exchange viewpoints and experiences acquired during this trial and demonstration process;

b) take the necessary steps to eliminate the shortcomings and deficiencies encountered during this process, such as implementing SIDs and STARs to unite the RNAV routes in question with their respective intermediate airports, in States that have not yet done so;

c) agree upon a single level of precision expressed in degrees, minutes and seconds, as specified in Annex 4, Chapter 8 – Area Chart, to indicate the geographical coordinates of radio aids and significant points; and

d) definitively implement a 10-minute MNT and/or 80-NM longitudinal separation along all ATS routes.

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Appendix A

RNAV Routes UT 776 (Sao Paulo / New York) y UT 419 (Río de Janeiro / New York

Schedule for the implementation of the pre-operational trials and demonstrations

- Publication of AIC and AIP Supplement
  Completion date: **16/05/2002**

- Effective date of pre-operational trials and demonstrations:
  Completion date: **11/07/2002**

- Data collection of trials and demonstrations:
  Completion date: **05/09/2002**

- Target date of evaluation period of trials and
  Demonstrations: **31/10/2002**

- Data Processing of trials and demonstrations: **31/10/2002**

- Coordinate data processing: **08/11/2002**

- Evaluation meeting (AP/ATM/4): **02-06/12/02**

- Completion of trials and demonstrations: **10/07/2003**

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Appendix B

Aproxímate Geographical Coordenates of routes UT 776 and UT 419

UT 776 SAO PAULO / NEW YORK			
FIR or significant points	**LATITUDE**	**LONGITUDE**	**CODE**
BRASILIA VOR/DME	S 15° 52’ 25.20	W 048° 21’ 16.80	**BRS VOR/DME**
BRASILIA / BELEM	S 10° 23’ 58.20’’	W 050° 30’ 02.4’’	**MEVOS**
BELEM / PARAMARIBO	N 02° 13’ 08.40	W 055° 56’ 30.60	**TIR NDB (1)**
PARAMARIBO / GEORGETOWN	N 05° 32’ 54	W 057° 12’ 54	**NEKOB**
GEORGETOWN / PIARCO	N 08° 55’	W 058° 31’ 24	**KAISO**
V C BIRD VOR/DME	N 17° 07’ 36	W 061° 47’ 53	**ANU**
PIARCO / SAN JUAN	N 17° 51’ 03.4	W 062° 14’ 12.1	**ODKAM (2)**
A 312	- - - - - - - - -	- - - - - - - -	**GRANN (3)**
A 523	- - - - - - - - -	- - - - - - - -	**JFK VOR/DME**

(1) Intersection/continúes with RNAV route RIO DE JANEIRO / NEW YORK (UT 419)
(2) A 312
(3) A 523

FIRs involved: Brasilia, Belem, Paramaribo, Georgetown, Piarco, San Juan, New York Oceanic.

UT 419 RÍO DE JANEIRO / NEW YORK			
FIR or significant points	**LATITUDE**	**LONGITUDE**	**CODE**
CONFINS VOR/DME	S 19° 33’ 29.40	W 044° 02’ 54.60	**CNF VOR/DME**
TIRIOS NDB	N 02° 13’ 08.40	W 055° 56’ 30.60	**TIR NDB (1)**
(1) Intersection/continúes with RNAV Route SAO PAULO / NEW YORK (UT 776)			

FIRs involved: Brasilia, Belem

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