



SAM/IG/4  
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**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**

**RESULT OF THE COORDINATION FOR RNAV ROUTES IMPLEMENTATION**

(Presented by the Secretariat)

<b>Summary</b>
<p>This working paper presents information on the status of implementation of RNAV routes received by Ad-hoc groups integrated by delegations, IATA and the FIRs involved created at the SAM/IG/3 Meeting.</p>
<p><b>References:</b></p> <ul style="list-style-type: none"><li>• Third Workshop/Meeting (SAM/IG/3) Report</li><li>• ATM/CNS Multilateral Meeting Argentina, Bolivia, Brazil, Paraguay and Uruguay (Lima, Perú 14-18 September 2009)</li></ul>
<p><b>ICAO Strategic objectives</b></p> <p><b>Strategic Objective C</b> <i>Environmental Protection</i></p> <p><b>Strategic Objective D</b> <i>Efficiency</i></p>

**1 Background**

1.1 The optimisation of the ATS routes structure in the terminal airspace (SID/STAR and RNAV) and en-route (RNAV), as well as the implementation of RNP approaches are associated to **Result 1.1 of Immediate Objective N° 1 of Project RLA/06/901**, Implementation of performance based navigation (PBN). Within this optimisation, the ATS routes network will continue to be improved, and if such were the case, those conventional routes that are not used by airspace users will be eliminated and will be replaced by RNAV routes.

1.2 As it may be recalled, during SAM/IG Meetings, and in addition to continuing with the revision, implementation, modification, and/or elimination of routes in the SAM Region, SAM/IG/3 Meeting approved a programme for optimisation of ATS routes structure in the SAM, Region, which main objective will be to achieve an inter-functional air traffic management system, available for all users during all flight phases, which complies with all agreed safety levels, provide economically optimum operations, be sustainable with regard to the environment and meets national safety aviation requirements.

1.3 Also, the ATS routes network must be the basis for airspace organization and for air traffic services requirements. It must be established to enable that most of flights operate in direct routes or as much as possible, in order to join flight origin/destination areas. This structure should be operationally viable. In order to reach an optimum ATC capacity, it may be necessary to establish non-optimal levels and/or trajectories, but could reduce the airspace structure complexity.

1.4 However, States, in the interest of providing users with the best possible trajectories, have continue to coordinate the implementation of some of the routes which have been requested by IATA, as well as others which have deemed pertinent to implement.

## 2 Discussion

2.1 To this end, the SAM/IG/3 Meeting, as well as in bilateral or multilateral meetings, analysed the implementation of some new ATS routes.

2.2 The SAM/IG/3 Meeting proceeded to evaluate a series of RNAV routes for its implementation. To this end, several ad-hoc groups were created, and composed by delegations of IATA and States involved, to analyse the feasibility of its implementation, agreeing that ad-hoc groups created to carry out such works, would have a 30 days deadline upon the finalisation of such meeting, in order to review within the environment of their respective administrations, and propose the changes deemed pertinent.

2.3 It was also agreed that the communications channels to be used for this coordination would be the use of tele-conferences previously agreed by e-mail. The results of such coordination should be informed to the Secretariat, in order to enable the preparation of the corresponding proposal for amendment to CAR/SAM ANP Table ATS.

2.4 In this connection, the Secretariat has made coordination with States/International Organizations and the information received to the date of the preparation of this working paper, is shown in **Appendix A**.

2.5 Likewise, during the ATM/CNS Multilateral Meeting Argentina, Bolivia, Brazil, Paraguay and Uruguay (Lima, Perú 14-18 September 2009), ad-hoc groups were created to review a series of routes that had been presented for analysis, in some cases, to realign them, and in other cases, for its implementation and/or elimination of the ATS routes network.

2.6 During the mentioned meeting, it was agreed that the routes Rosario/Porto Alegre and Montevideo/Asunción, and Córdoba/Porto Alegre, be again analysed during the SAM/IG/4 Meeting. The decisions adopted in the above-mentioned multilateral meeting are shown in **Appendix B** to this working paper.

### 3 **Suggested action**

3.1 The meeting is invited to take note and review the information provided in **Appendix A** and in **Appendix B** to this working paper, as regards routes Rosario/Porto Alegre and Montevideo/Asunción, and Córdoba/Porto Alegre, and the pertinent administrations are encouraged to continue coordination with a view to implement pending ATS routes or define that the same be revised as part of the of the optimisation programme of the SAM Region ATS routes structure.

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## APPENDIX A

### Decisions adopted during SAM/IG/3 Meeting and available comments in the Secretariat

#### Montevideo - Buenos Aires Air lift

Uruguay has not yet arranged these airspace sectors nor implemented CNS improvements already planned for this route. In view of the above, the proposed implementation of this route is pending.

#### RNAV VOR CRR/VOR FNO Route

At the ATM/CNS Multilateral Meeting, Argentina, Bolivia, Brazil, Paraguay and Uruguay, agreed to implement the RNAV route Montevideo/Europe UM661. (See **Appendix B** to this working paper).

#### UM 662 Guayaquil – Madrid

Within the Civil/Military coordination, Venezuela continues coordination with the Venezuelan Air Force a trajectory within the Venezuelan airspace. Once such trajectory is obtained, it shall be informed to the ICAO SAM Regional Office to continue with the coordination.

#### UM 527 Lima – Madrid

States involved have agreed that the date for implementation of this route shall be 27 August 2009, with effective implementation date 24 September 2009. The following trajectory is agreed:

<b>ESPACIO AÉREO SUPERIOR / UPPER AIRSPACE</b> <b>Lima – Madrid UM 527</b>		
<b>Designador Designator</b>	<b>Latitud Latitude</b>	<b>Longitud Longitude</b>
<b>Lima VOR</b>	S12°00'30'	W077°07'22''
<b>SIGOB</b>	S08°28'16''	W073°20'18''
<b>AKTOR</b>	S04°00'34''	W068°44'13''
<b>MULIP</b>	S02°29'53''	W067°12'10''
<b>AKNOV</b>	S00°50'33''	W065°20'47''
<b>DOBDA</b>	N04°32'18.59''	W060°07'49.87''
<b>TIM VOR</b>	N06°29'53''	W058°15'46''
<b>UMREM</b>	N07°56'06.73''	W057°00'03.66''
<b>TRAPP</b>	N09°05'06''	W055°59'30''

#### Santiago – Sao Paulo

States involved, Argentina, Brazil and Chile, agreed to incorporate this item in the Feasibility Study for ATS routes network optimisation in the South American Region.

**Santiago – Miami**

From coordination carried out by Chile, Peru and IATA it was agreed to evaluate the following trajectory:

Santiago – UL 302 up to VOR LIMA – VOR CHACHAPOYA – KORBO – BOKAN - VOR LA PALMA – CIEGO DE AVILA – URSUS-

Comparison of distances:

UL 780: (Santiago – URSUS) 3.521 NM

Trajectory proposed: 3. 504 NM

According to the trajectory under study, coordination shall continue with States involved and IATA, in order to agree the definitive route and proceed to its implementation in the pertinent time and manner.

Note: it is expected that during the SAM/IG/4 Meeting, its implementation be analysed.

**ATS Pending routes**

As agreed in the SAM/IG/2 meeting, ad-hoc groups composed by IATA and States involved would carry out the necessary revisions of routes with pending coordination, as shown in the following chart:

Following are the conclusions adopted in the reference meeting:

<b>ROUTE</b>	<b>REMARKS</b>
<b>UL 306</b>	Coordination pending among BRAZIL, FRENCH GUYANA and SURINAME.
<b>UM782 UL201 UA317</b>	Brazil shall inform on the resulting modifications on the realignment of these routes.
<b>UA307</b>	<i>States involved, Argentina, Brazil and Chile, agreed to incorporate this matter in the Feasibility Study for the Programme for Optimising the ATS Routes Network in the South American Region (See <b>Appendix A</b>)</i> ARGENTINA, BRAZIL, IATA
<b>San José (C. Rica) – Santo Domingo</b>	IATA will coordinate with the NACC Regional Office and CAR States. SAM Regional Office shall coordinate with ATA, Colombia and Panamá

## APPENDIX B

### Decisions adopted at the Multilateral Meeting Argentina, Bolivia, Brazil, Paraguay and Uruguay (Lima, Perú 14-18 September 2009)

#### RNAV ROUTE MONTEVIDEO–EUROPE UM 661

1.1 The administrations of Brazil and Uruguay agreed on the implementation of a new two-way RNAV route UM 661 to join Montevideo with Europe through the EUR/SAM Corridor. In addition to enabling flights with a shorter trajectory, this route clears high density traffic terminals of the Curitiba and Brasilia FIRs, joining the same from the position ERETU at the South Atlantic, with multiple-entry routes to Europe.

1.2 The publication of this route **UM 661** was coordinated for **11 March 2010**, with **applicable date 6 May 2010**.

#### Main Coordinates:

CRR	34° 49' 57.8'' S/ 056° 01' 30.5'' W
KILUM	34° 21' 13'' S/ 055° 01' 38'' W
TODAX	33° 23' 17'' S/ 053° 46' 02'' W
DAKIS	33° 13' 28'' S/ 053° 31' 12'' W
KONDU	30° 59' 57'' S/ 050° 18' 20'' W
ERETU	03° 07' 42'' N / 028° 48' 00'' W

#### RNAV ROUTE BRASILIA/ BUENOS AIRES UM 532

1.3 The Argentinean, Brazilian and Uruguayan administrations agreed on the implementation of a two-way new RNAV Route **UM532**, to join Brasilia/Buenos Aires through the points CUARA and KUKEN. The publication of this route **UM 532** was coordinated for **11 March 2010**, with **applicable date 6 May 2010**. As of the reporting point CUARA up to KUKEN, the route is coincident with **UL 324**.

#### Routes Rosario/Porto Alegre and Route Montevideo/Asunción

1.4 These routes proposed by Uruguay consider significant fuel savings and improvement of the environment and in this connection, the administrations of Brazil and Paraguay agree to implement the same as soon as possible, when the Argentinean administration finishes the works being carried out by its airspace-restructuring team.

1.5 In this connection, it decided to again try this implementation at the SAM/IG/4. Meeting.

#### Route Córdoba/Porto Alegre

1.6 For the implementation of this route proposed by Brazil, Uruguay expressed its agreement in implementing it. However, the meeting considered that this proposal was not presented as a working paper and the same was acknowledged at the beginning of the meeting, with the delivery of charts. This did not permit the other parties to thoroughly analyse the proposal.

1.7 With regard to the above, it was decided to deal with this matter at the SAM/IG/4 Meeting, where a more defined position could be obtained from the rest of the administrations.

**Route from the VAS VOR in the Asunción FIR up to BRS VOR in the Brasilia FIR UM 403**

1.8 The administrations of Brazil and Paraguay agreed on the implementation of a two-way RNAV route **UM 403** in points VAS VOR in the Asunción FIR and BRS VOR in the Brasilia FIR. This route shall provide significant fuel savings and environment improvement to the route Asunción/ Brasilia.

**Main coordinates:**

VOR VAS	25° 14' 39'' S/ 057° 31' 19'' W
ILSUD	23° 24' 23'' S/ 055° 30' 53'' W
VOR BRS	15° 52' 29'' S/ 048° 01' 17'' W

1.9 The publication of this route **UM 403** was coordinated for **11 March 2010, with applicable date 6 May 2010.**

**Route from position LIMPO in the Amazónica FIR up to position APARE in the La Paz FIR UM 784**

1.10 The administrations of Brazil and Bolivia AGREED ON THE IMPLEMENTATION OF a two-way RNAV route **UM 784** in points LIMPO in the Amazónica FIR and APARE in the La Paz FIR. This route shall provide significant fuel savings and environment improvement to the route Panamá/Buenos Aires.

**Main coordinates:**

LIMPO	04° 53' 36'' S / 072° 22' 00'' W
KILEV	10° 58' 54'' S / 069° 06' 04'' W (FIR boundaries)
APARE	16° 50' 27'' S / 065° 48' 36'' W

1.11 The publication of this route **UM 784** was agreed for **11 March 2010, with applicable date 6 May 2010.**

**Deleted routes**

1.12 The meeting decided to eliminate route **UA 309** from Montevideo to Porto Alegre, and consequently it will be published through AIRAC for **11 March 2010, with applicable date 6 May 2010.**

1.13 It was also decided to eliminate route **UB 695** from Asunción up to URUBUPUNGA (Curitiba FIR), and consequently will be published through AIRAC, 56 days after implementation of route **UM 403** foreseen for **6 May 2010.**