



INTERNATIONAL CIVIL AVIATION ORGANIZATION

MIDDLE EAST OFFICE

SECOND FLEXIBLE ATS ROUTE MANAGEMENT WORKSHOP

(Dubai, UAE, 15-17 February 2011)

SUMMARY OF DISCUSSIONS

1. INTRODUCTION

1.1 The workshop was conducted at the initiative of IATA with the support of ICAO and CANSO with the aim of promoting the early implementation of the Global Air Navigation Plan (GANP) Objectives on a global basis. The workshop was attended by a total of thirty eight (38) participants from sixteen (17) States, and Six (9) organizations and corporations). The list of participants and speakers is available in **Appendix A** to this Summary Report. Captain Alan Stealey, Divisional Senior Vice President Flight Operations Emirates Air Lines opened the Workshop.

1.2 Mr. Don Harris from IATA Montreal acted as the chairperson of the workshop and Ms. Tanja Grobotek from IATA, Mr. Volker Meyer from Jeppesen and Mr. Saud Al Adhoobi, RO/ATM ICAO MID, were the Secretaries that supported the Workshop.

1.3 In the Global Air Navigation Plan (Doc.9750), ICAO introduced the concept of dynamic and flexible ATM as one of its Strategic Objective. Global Plan Initiative (GPI-7) states that routes need not be fixed to pre-determined waypoints, except where required for control purposes. GPI-8 enhances the implementation process with Collaborative Decision-Management techniques to organize airspace in a collaborative manner involving all stakeholders to accommodate *user-defined flexible routings*

1.4 iFlex intends to build on these Strategic Objectives and transition into a more dynamic environment that remains agile enough to address daily flight operations variables, yet remains responsive to Air Traffic Management (ATM) and Operators' needs. Flexibility is derived from the design of the airspace and opportunities exist in almost all operating environments, whether dense and short-haul or sparse traffic flows and long-haul flights.

1.5 Specifically, environmental benefits in fuel burn and CO₂ avoidance are significant in longer-range flights. This is evident in the two sampled long-haul flight routings – that of Emirates Airlines flying from Dubai to Sao Paolo and Delta Airlines on the Atlanta to Johannesburg leg. Flying across the South Atlantic airspace, and the recent activation of the AORRA (a random route area), there remain a limited number of access points available for entering and exiting this airspace, especially on the north western and western boundaries (Dakar, Atlantico, Rochambeau and Piarco FIR's). The relative lack of a supporting infrastructure (lack of transition waypoints/routings) substantially limits the ability to accomplish route efficiencies sought after by the ICAO Global roadmap. Besides finding ways and means to identify the major challenges on long-haul operations, a collaborative process involving all stakeholders in the context of an end-to-end flight routing was necessitated by means of a workshop setting..

1.6 iFlex Solution: In order to realize the fuel savings and Carbon Emission reductions envisioned by the creation of the AORRA, both additional AORRA entry waypoints, transitions to domestic/continental airspace and additional crossing opportunities for the EUROSAM corridor are required. The two 'demo' flights deployed as proving flights for the iFLEX concept are estimated to yield approximately 2,3 million kgs CO₂.

2. DISCUSSIONS

2.1 On the first day of the workshop, participants were provided with presentations, from IATA introducing the iFlex background, concept and objectives, then the participants were presented with briefings from the following:-

- a) Emirates Airlines on Dubai (DXB) to Sao Paulo (GRU) user preferred routes to achieve maximum efficiencies and carbon emissions savings based on prevailing wind models.
- b) Delta Airlines on Atlanta (ATL) to Johannesburg (JNB) user preferred routes to achieve maximum efficiencies and carbon emissions savings based on prevailing wind models. Delta provided a briefing on changes to airspace infrastructure that were agreed at Workshop 1 and the positive affect these changes are having on Delta's operations.
- c) CANSO on Best Practices from previous Flex Route implementations in Australia and Canada.
- d) IATA introducing Civil – Military cooperation.
- e) IATA introducing Civil – Military cooperation.

2.2 On the second day, the workshop broke out into three break out sessions groups as follows:-

- 1) Breakout session (1) exploring ways and means of cooperating with State military organizations on Flexible Use of Airspace (FUA).
- 2) Breakout session (2) consisted of the following FIRs Luanda, Kinshasa, Brazzaville, and Accra FIRs to finalize airspace infrastructure changes which were initiated at Workshop 1.
- 3) Breakout session (3) was to develop proposed changes in airspace infrastructure which will support iFLEX operations over continental Africa and parts of the Middle East. The group agreed to implement a number of new waypoints, transition routes and temporary airways which will allow for flexible routing options over Africa and parts of the Middle East.

In this regard Breakout session (3) also discussed the possibility of opening the segment between OZT (Ouarzazate) VOR to GAO VOR (Niamey). ENNA, Algeria was working

with the concerned authorities to expedite approval for this fixed ATS route. It was also noted that there would be significant migration of traffic to this new route when open, from those that they are currently operating on such as UR977 and UM372 via BULIS on the GMMM (Casablanca) and GOOO (Dakar FIR/UIR) boundary.

The three break-out groups met at the end of each the day to review the individual proposals and to harmonize individual proposals.

2.3 On the third and last day, the breakout Groups met to review the work achieved and began drafting the workshop report.

2.4 The work achieved during the breakout sessions are contained in **Appendices B and C** to the summary report.

3. RECOMMENDATIONS

3.1 **AORRA** ICAO and IATA had agreed during the course of Workshop 1 to conduct a feasibility study to determine if it would be operationally advantageous and feasible to move the AORRA boundary northward.

The Group endorsed Dakar meeting conclusion that the AORRA boundary will be moved northward to be within the Radar coverage of Accra ACC and Roberts FIR VHF coverage.

3.2 Future Action/Proposals for iFlex for Waypoints, UT Airways and Transitions:-

- a) Individual FIR agencies to conduct safety assessment and to confirm the findings of the Dubai Route Conference representatives that operations utilizing the new waypoints, transition routes and temporary airways created herein may be performed safely and in accordance with existing ATM procedures.
- b) The members from ASECNA agreed to coordinate with ASECNA headquarters regarding proposed airspace changes to the Dakar ACC, Ouagadougou ACC, Douala ACC and Abidjan ACC and indicate agreement by 25 February 2011 to IATA SO&I AFI Regional Office Mr. Konate

Mr. Konate will coordinate airspace changes requirements with ASECNA (Dakar and Abidjan ACC and HQ).

- c) IATA and ICAO to coordinate proposed airspace changes with Entebbe, Nairobi, Addis, Asmara, Cairo, Tripoli, Amman and Sana'a FIR's as they were not represented at the meeting.

Mr. Konate and Ms. Sayed will coordinate airspace changes requirements with above FIRs.

- d) IATA to submit all proposed route and FIR/UTA/TMA crossings to Jeppesen for Latitudes/Longitudes; bearings and distances. Jeppesen will forward calculated values back to the IATA as follows.

- For AORRA entry / exit points and EUR SAM corridor crossing points by 25 February for forwarding to ANSP's involved.
 - Continental routings by 4 March 2011.
- e) ANSP's will obtain the agreed 5-letter name codes during Paris meeting in preparation for publishing the same as follows:-
- AORRA entry / exit points and EUR SAM corridor crossing points to be published under AIRAC March 10, 2011 AIRAC Cycle with effective date 2 June 2011.
 - i. Dakar report items X to X
 - Continental routings to be published under AIRAC April 7, 2011 AIRAC Cycle with effective date 30 June 2011. Those ANSPs who are unable to access web based ICARD system, 5NLC's will be obtained from ICAO.
- FIR to ensure coordination of 5NLC's for boundaries crossings with neighboring FIRs.
- f) A trial period will allow Delta Airlines and Emirates Airline to commence participating with trial flights as follows:-
- AORRA entry / exit points and EUR SAM corridor crossing points from April 7, 2011 through June 2, 2011.
 - A trial period for continental routings from May 5, 2011 through June 30, 2011
- g) The trial will be conducted on the basis of agreed upon procedures for flexible route operations. IATA will present working papers at the third workshop detailing proposed set of procedures.
- h) Convene a joint meeting with Atlantico, Piarco, Cayenne-Rochambeau, and Dakar to reach further agreements to complete and harmonize implementation of iFlex infrastructure improvements allowing for more efficient routes and environmental savings in the South Atlantic airspace
- i) IATA to present an Information Paper to update the SAT meeting in May 2011. The IP will outline the outcome of iFlex workshops in building the required infrastructure to support 'demo' flights.

3.3 The third Flexible ATS Route Management Workshop will be held at the ICAO EUR/NAT Offices in Paris from 8 to 10 March, 2011, with its Provisional Agenda:

Agenda Item 1: Welcome, Introductions and Logistics**Agenda Item 2: Briefing on the aims of the iFLEX program**

IATA will brief the Workshop on the origin, aims and objectives of the iFLEX Program.

Agenda Item 3: Best practices briefings and demonstrations

CANSO will brief the Workshop on Flexible Route initiatives that have been implemented in other Regions and States. The briefing will highlight successes and procedural requirements that have been developed in support of Flex Route implementation. CANSO industry partners will also provide ATM demonstrations as used in order to support implementation

Agenda Item 4: Briefing on Dubai – Sao Paulo operations

Emirates Airlines as a volunteer airline will brief the workshop on operations on the Dubai – Sao Paulo route and v.v. The briefing will highlight challenges faced in today's environment and present iFLEX options that would allow Emirates to gain operational efficiencies reduce fuel consumption and carbon emissions.

Agenda Item 5: Briefing on Atlanta– Johannesburg operations

Delta Airlines as a volunteer airline will brief the Workshop on operations on the Atlanta - Johannesburg route and v.v. The briefing will highlight challenges faced in today's environment and present iFLEX options that would allow Delta Airlines to gain operational efficiencies reduce fuel consumption and carbon emissions.

Agenda Item 6: Develop ATM procedures to support Flex Route operations

This session will consider strategies that will support the use of Flexible Routes on demonstration flights between Dubai and Sao Paulo and Atlanta and Johannesburg and v.v. ATM system experts and airline representatives will collaborate to develop the necessary ATM procedures to support the use of Flexible Routes.

Agenda Item 7: Develop pilot and dispatcher procedures to support Flex Route operations

This session will consider, if required, what special procedures may need to be developed for pilots and dispatchers in support of implementing Flex Route operations.

Agenda Item 8: Any other business

Any other matters not specifically provided for and covered under the above agenda items, might be addressed under this agenda item.

iFLEX /2-2011
Appendix A to the Report

LIST OF PARTICIPANTS

NAME	TITLE & ADDRESS
STATES ALGERIA- ENNA Mr. Nadjib Khiali	Head of Air Traffic Service National Establishment of Air Navigation (ENNA) 1 Avenue of Independence, Algiers, Algeria Tel: (213) 661 4089 22 Fax: (213) 216 72130 Email: nadjib-khiali@enna.dz nadjib.khiali@hotmail.com
Mr. Nazim Chennaoui	Head of Navigation Studies and Development Service Air Navigation National Establishment (ENNA) Air Traffic Department 1 Avenue of Independence, Algiers, Algeria Tel: (213) 771 071145 Fax: (213) 216 77395 Email: chennaoui.nazim@yahoo.fr nazimch83@yahoo.fr
ANGOLA - ENANA Mr. Amilcar Soeiro Nascimento	Chief of Airspace Division ENANA Luanda International Airport, P O Box 841, CCR Tel: (244) 923 308525 Fax: (244) 222 651038 Email : amilcarnascimento@hotmail.com

NAME	TITLE & ADDRESS
Mr. Manuel Nzakimuena	Director Air Navigation ENANA – EP Luanda International Airport, P O Box 841, CCR Tel: (244) 222 651023 Fax: (244) 222 651038 Email: nmanuel@enana-ao.com
ANGOLA - INAVIC Mr. Arquimedes Ferraira	Air Navigation Director INAVIC Rua Miguel De Melo 96 6° Andar P O Box 569, Luanda, CCR Email : arquimedesf@gmail.com
BAHRAIN Mr. Saleem Mohamed Hassan	Chief Air Traffic Management Civil Aviation Affairs P.O. Box 586 KINGDOM OF BAHRAIN Fax: (973) 17 321 992 Tel: (973) 17 321 117 Mobile: (973) 39 608 860 Email: saleemmh@caa.gov.bh
GHANA Mr. Albert Aidoo Taylor	Director, Air Traffic Services Ghana Civil Aviation Authority Private Mail Bag Kotoka International Airport Accra, Ghana Tel: (233 30) 2776079 Fax: (233 30) 2773293 Email: ataylor@gcaa.com.gh

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NAME	TITLE & ADDRESS
Mr. Kenneth Kofi Kwawukume	Kenneth Kofi Kwawukume Ghana Civil Aviation Authority Private Mail Bag Kotoka International Airport Accra, Ghana Tel: (233 30) 2776171 Ext: 1352 Fax: (233 30) 27769401 Email: kookwawukume@yahoo.co.uk
IRAN Mr. Ahmad Kaveh Firouz	Expert in Charge of Area Control Centre Training Dept Iran Airports Company Tel: +98 21 445 44 120 Fax: +98 214 454 4114 Email: ahmadkavehfirouz@gmail.com
Mr. Morad Esmaeili	Deputy of Supervisory on Aeronautical Operations Bureau Civil Aviation Organisation of Iran Tel: +98 21 660 73 534 Fax: +98 21 446 65 576 Email: moradesmaeili@yahoo.com
KAZAERONAVIGATSIA (KAZAKHSTAN) Mr. Sergey Kulnazarov	Director General RSE "Kazaeronavigatsia"
Mr. Marat Dautaliyev	Managing Director of Economics
Mr. Sergali Parmanov	Head of ATM Division
Mr. Vyacheslav Skiteikin	Head of Technical Department
Mr. Kairat Tlenshin	Head of International Department Email: tlenshin@ans.kz

NAME	TITLE & ADDRESS
MEXICO Rodrigo Bruce Magallon de la Teja	Air Traffic Services Director SENEAM Av. 602 No. 161, Zona Federal A.I.C.M., Deleg. Venustiano Carranza, Mexico, D.F. 15620 Tel: +52 (55) 5786 5513 Fax: +52 (55) 2598 0065 Email: dta_seneam@sct.gob.mx Email: rbrucemt@gmail.com
NIGERIA - NAMA Mr. R.O. Raheem	Ag. Director – Ops Nigerian Airspace Management Agency (N.A.M.A.) Murtala Muhammed Int’l Airport, P.M.B. 21084, Ikeja, Lagos Tel: +234 805 309 8219 Tel: +234 803 348 9757 Email: leorasko@yahoo.com
Mr. J.A Shoremekun	GM Airspace Planning Nigerian Airspace Management Agency (N.A.M.A.) Murtala Muhammed Int’l Airport, P.M.B. 21084, Ikeja, Lagos Tel: +234 805 509 6110 Email: shoremekun.jacob@yahoo.com Email: JShoremekun@namahqtr.net
Mr. H.I. Jibrin,	Assistant GM Airspace Planning Nigerian Airspace Management Agency (N.A.M.A.) Murtala Muhammed Int’l Airport, P.M.B. 21084, Ikeja, Lagos Tel: +234 805 509 6153 Fax: Email : haskejibrin@yahoo.co.uk

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NAME	TITLE & ADDRESS
Mr. John C. Onyegiri	GM Safety Mgmt. Systems/Quality Assurance Nigerian Airspace Management Agency Murtala Muhammed Airport, P.M.B. 21084,Ikeja – Lagos, Nigeria Mobile : +234 805 509 6138 Mobile : +234 803 349 4892 Email :- jonyegiri@namahqtr.net Email : john.onyegiri@yahoo.com
Roberts FIR Mr. Adourahamane Soumah	Air Traffic Control Officer Roberts FIR Tel: +2316745534 Email: abdstozo@yahoo.fr
REPUBLIC DEMOCRATIC OF CONGO (DRC) – KINSHASA Mr. Biduaya Lukengu Raphael	
Mr. Muanda Mayala	
Mr. Makabu Kiboko	
RVA – DRC ANSP Mr. Pascal Izai	Air Navigation Director RVA Crois. Des av. Kabasele Tshamala et Aerodromes de N’dolo B.P. 6574, Kinshasa / N’Dolo Republique Democratique Du Congo Tel: +243 99 816 39 45 Email: izai_pascal@yahoo.fr

NAME	TITLE & ADDRESS
SAUDI ARABIA Mr. Aon Abdullah Al-Garni	GM.ATC ANS.GACA P O Box 40217 Jeddah 21499 Kingdom of Saudi Arabia Tel: +966 505 772 984 Fax: +966 264 02855 Email: aonabdul@yahoo.com
Mr. Atif Mohamed Al-Harhi	ATC, Operation GACA P O Box 7084, Makkah 21955, Kingdom of Saudi Arabia Tel: +966 233 8505 Fax: +966 268 54021 Email: ahatsa@hotmail.com
Mr. Mohamed Ayesh Hassan	ATC Supervisor GACA P O Box 6326, Jeddah 21442, Kingdom of Saudi Arabia Tel: +966 504 680 400 Fax: +966 268 54011 Email: m.ayesh@hotmail.com
Mr. Majid Ibrahim Mirza	Executive ACC Controller GACA P O Box 112346, Jeddah 21371, Kingdom of Saudi Arabia Tel: +966 555 629982 Fax: +966 268 54011 Email: abumurhaf@hotmail.com
SUDAN Mr. Bushara Bushara	Airspace Management D. Director Sudan CAA Khartoum Airport P O Box 94, Khartoum, Sudan Tel: +249 9121 77845 Email: busharanasr@gmail.com

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NAME	TITLE & ADDRESS
<p>UNITED ARAB EMIRATES Mr. Talal Hussain Al Hammadi</p>	<p>Acting Airspace Coordinator GCAA P O Box 666, Abu Dhabi, UAE Tel: +971 2 599 6890 Fax: +971 2 599 6883 Email: thammadi@szc.gcaa.ae</p>
<p>ORGANIZATIONS ASECNA Mr. Serge Moufouma</p>	<p>Head of Air Navigation Service ASECNA P O Box 218, Brazzaville Tel: (242) 06 992 0454 Fax: (242) 22 282 0050 Email : moufouma@yahoo.fr congoena@asecna bh</p>
<p>Mr. Saadou Mahamane</p>	<p>Air Traffic Controller Instructor / Head of ATC Training ASECNA BP 1096, Niamey, Niger Tel: (227) 9697 7967 Fax: (227) 20 73 55 12 Email: saadoumarafa1@yahoo.fr</p>
<p>Mr.Tadeadjim Mornan</p>	<p>Air Traffic Controller Instructor ASECNA BP 205, Nouakchott, Mauritania Tel: (222) 46737159 (222) 3623 0813 Email: luwehn@yahoo.fr</p>
<p>Mr. Sylvain Nziengui</p>	<p>Air Traffic Controller Instructor ASECNA BP 2252, Libreville, Gabon Tel: (241) 7235536 (241) 031 09587 Email: sasionna@yahoo.fr</p>

NAME	TITLE & ADDRESS
Mr. Sylvain Nziengui	Air Traffic Controller Instructor ASECNA BP 2252, Libreville, Gabon Tel: (241) 7235536 (241) 031 09587 Email: sadionna@yahoo.fr
Mr. Vincent Gosso	Air Traffic Controller Instructor ASECNA BP 70 N'Djamena, Tchad Tel: (235) 66 44 98 80 Email: gsovincent@yahoo.fr
CANSO Mr. Greg McDonald	Senior Operational Specialist Air services Australia P O Box 1093, Tullamarine VIC 3042, Australia Tel: (61 3) 9339 2516 Email: Greg.Mcdonald@AirservicesAustralia.com
IATA – CANADA Don Harris	Senior ATM Consultant Infrastructure Strategy, SO&I IATA, Montreal 14 Cairnwell Close, Halifax, NS , Canada 3380A6 Tel: (1 902) 479 2109 Email: harrisd@iata.org
Mr. Bernard Gonsalves	Email: gonsalvesb@iata.org
Joel Morin	Nav Canada 316 Twin Brooks Dr., Edmonton ATS, T6J 6S4, Canada Tel: (1 780) 434 8410 Email: morin.joel@gmail.com

NAME	TITLE & ADDRESS
<p>DELTA AIR LINES INC Mr. Tom Holder</p>	<p>Manager Flight Operations Africa Delta Air Lines Inc Department 026 P O Box 20706, Atlanta, GA 30320-60001 Tel: (1 404) 790 5786 Fax: (1 404) 677 2550 Email : tom.holder@delta.com</p>
<p>EMIRATE AIR LINES Mr. Bob Everest</p>	<p>Vice President Flight Operations Support Emirates Airlines, Dubai Flight Operations Dept. P O Box 686 Dubai, U.A.E Tel: 00971-4-708 4300 Fax: 00971-4-286 4085 Email: bob.everest@emirates.com</p>
<p>Mr. Grant Wilson</p>	<p>Manager Aeronautical Services & ATM Emirates Airlines, Dubai Flight Operations Dept. P O Box 686 Dubai, U.A.E Tel: 00971-4-708 4302 Fax: 00971-4-286 4085 Email: grant.wilson@emirates.com</p>
<p>Mr. Douglas Michael</p>	<p>Aeronautical Services Manager Emirates Airlines, Dubai Flight Operations Dept P O Box 686 Dubai, U.A.E Tel: 00971-4- 708 4305 Fax: 00971-4-286 4085 Email: doug.michael@emirates.com</p>

NAME	TITLE & ADDRESS
Mr. Tomonori Tsuruzono	Aeronautical Services Manager Emirates Airlines, Dubai Flight Operations Dept. P O Box 686 Dubai, U.A.E Tel: 00971-4- 708 5595 Fax: 00971-4-286 4085 Email: tomonori.tsuruzono@emirates.com
IATA – JOHANNESBURG Mr. Gaoussou Konate	Regional Director - SO&I, Africa International Air Transport Association No.88 Stella Street Ground Floor, Sandown Mews East , Sandown, Sandton, Pvt Bag X9916 PostNet Suite 167, Sandton , South Africa 2146 Tel: +27 11 523 2732 Fax: + 27 11 523 2701 / 04 Email: KonateG@iata.org
Mrs. Tanja Grobotek	Assistant Director, Africa Safety, Operations & Infrastructure International Air Transport Association No.88 Stella Street Ground Floor, Sandown Mews East , Sandown, Sandton, Pvt Bag X9916 PostNet Suite 167, Sandton South Africa 2146 Tel: +27 (11) 523 2714 Fax: +27 (11) 523 2704 Email: GrobotekT@iata.org
IFATCA – Amman Mr. Hisham Bazian	EVP AFM Tel: +962 6 412 2943 Email: bazian007@yahoo.com

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NAME	TITLE & ADDRESS
JEPPESEN Mr. Volker Meyer	Manager International Relations Jeppesen GmbH Frankfurter Str. 233, 63263 New-Isenburg, Germany Tel: +49 6102 50 7240 Fax: +49 6102 50 7239 Email: Volker.meyer@jeppesen.com
Mr. Werner Kurz	Director International Relations Jeppesen GmbH Frankfurter Str. 233, 63263 New-Isenburg, Germany Tel: +49 6102 50 8170 Fax: +49 6102 50 7239 Email: Werner.Kurz@jeppesen.com

Appendix B

1) New AORRA entry/exit points and FIR boundaries

It has been agreed that AORRA entry/exit points and transitions as listed in items 1.1) to 1.5) below will be implemented effective 2 June 2011 with AIP Supplement published AIRAC 10 March 2011.

This implementation is in accordance with Report of the First Flexible ATS Route Management Workshop held in Dakar, Senegal, 11-13 January 2011

1.1 Dakar FIR/Abidjan ACC

i) Within Dakar FIR / Abidjan ACC FIR below new Entry/Exit/FIR boundaries waypoint was established:

- New FIR Entry/Exit Wpts

Working 5NLC	Existing 5NLC	Latitude	Longitude	Comment
ARABA ¹	TBA	N 04 30 26.00	W 003 00 00.00	Dakar FIR boundary

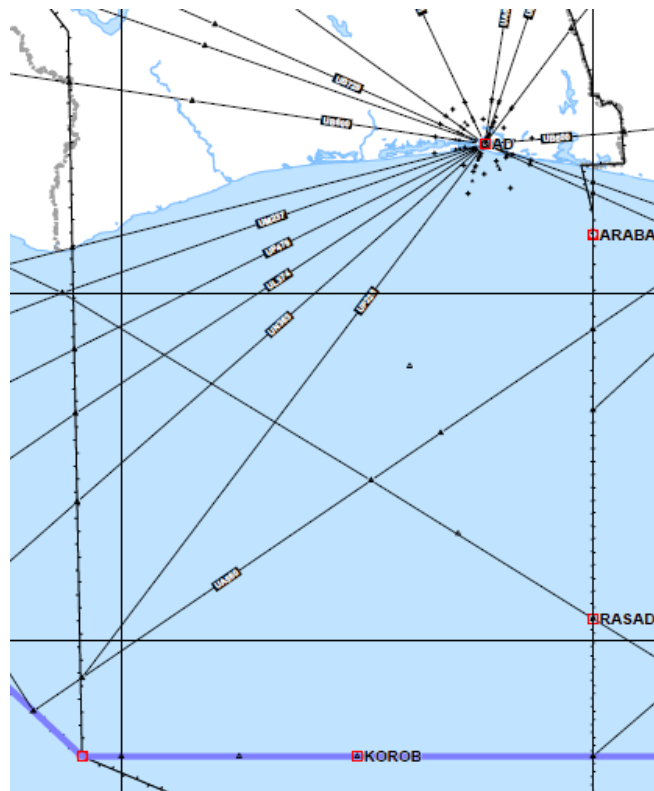
ii) The meeting proposed to Abidjan ACC to accept ICAO FPL filed 15 a direct (DCT) segment from/to following waypoints:

- KOROB DCT RASAD
- AD (VOR) DCT ARABA

1

¹ 5NLC obtained by Accra FIR

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1.2 Accra FIR

i) Within Accra FIR below new Entry/Exit/FIR boundaries waypoints were established:

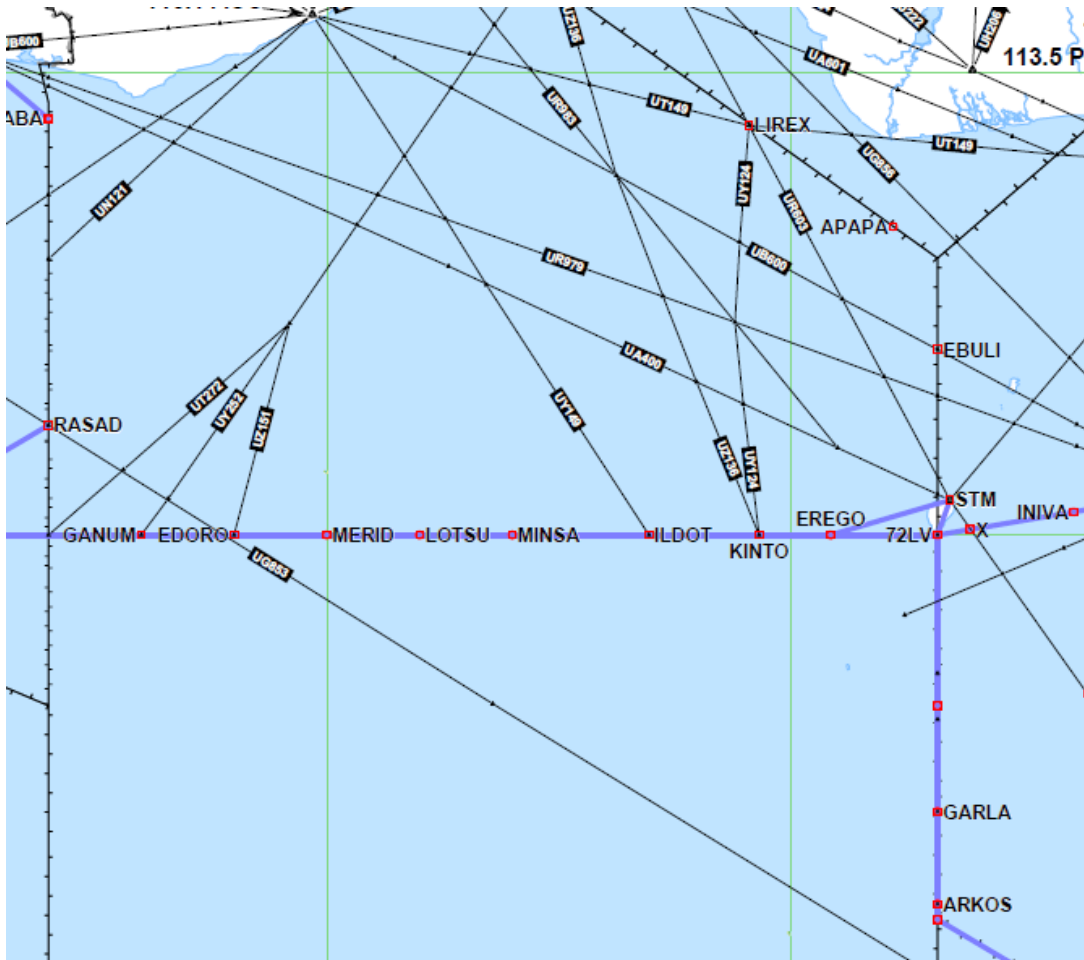
• New AORRA Entry/Exit Wpts

Working 5NLC	Existing 5NLC	Latitude	Longitude
MERID ¹	TBA	N 00 00 00.00	E 000 00 00.00
LOTSU ¹	TBA	N 00 00 00.00	E 001 00 00.00
MINSA ¹	TBA	N 00 00 00.00	E 002 00 00.00
EREGO ¹	TBA	N 00 00 00.00	E 005 26 25.09
GARLA ¹	68LV	S 03 00 00.00	E 006 35 00.00
ARKOS ¹	17LV	S 04 00 00.00	E 006 35 00.00

• New FIR Entry/Exit Wpts

Working 5NLC	Existing 5NLC	Latitude	Longitude	Comment
ARABA ¹	TBA	N 04 30 26.00	W 003 00 00.00	Dakar FIR boundary
APAPA ¹	TBA	N 03 29 18.42	E 005 54 23.63	Kano FIR boundary

ii) Within Accra FIR it is acceptable to file in ICAO FPL filed 15 a direct (DCT) segment from any FIR boundary waypoint to any FIR boundary waypoint.



¹ 5NLC obtained by Accra FIR

1.3 Sao Tome

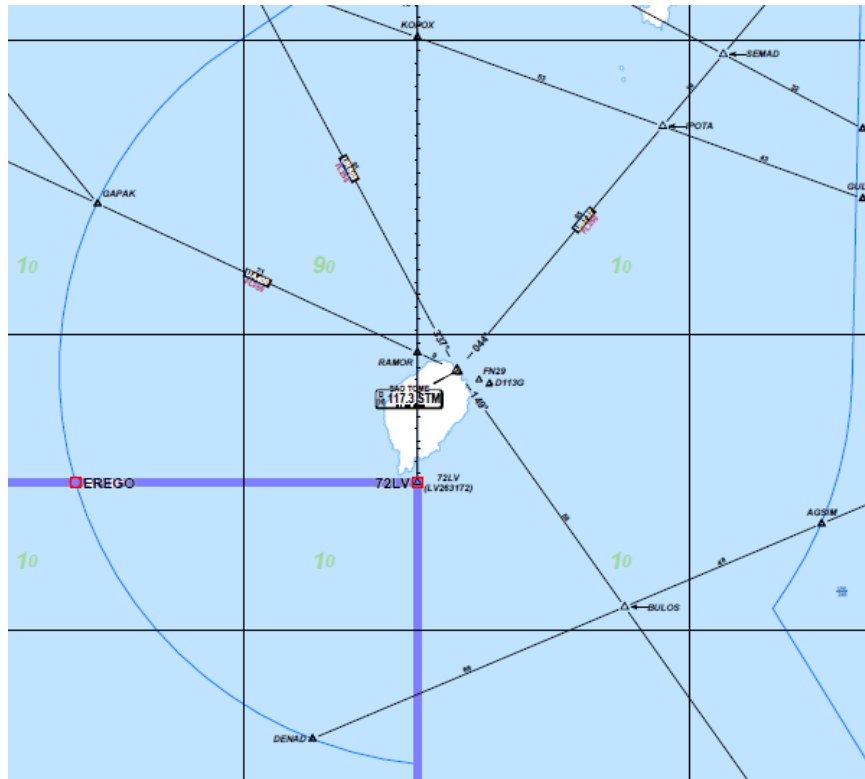
ICAO WACAF and IATA had coordinated requirements within Sao Tome FIR electronically, and Sao Tome had agreed to facilitate implementation as per Report of the First Flexible ATS Route Management Workshop Dakar Senegal, 11-13 January 2011, item 4b.

i) Within Sao Tome TMA below new Entry/Exit/FIR boundaries waypoints were established:

- New AORRA Entry/Exit Wpts

Working 5NLC	Existing 5NLC	Latitude	Longitude
EREGO ¹	TBA	N 00 00 00.00	E 005 26 25.09
72LV	TBA	N 00 00 00.00	E 006 35 00.00

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1.4 Brazzaville FIR; Libreville UTA

i) Within Brazzaville FIR & Libreville UTA new Entry/Exit/FIR boundaries waypoints were established:

• New AORRA Entry/Exit Wpts

Working 5NLC	Existing 5NLC	Latitude	Longitude
GARLA ¹	68LV	S 03 00 00.00	E 006 35 00.00
ARKOS ¹	17LV	S 04 00 00.00	E 006 35 00.00
EKBOB ²	Tba	S 05 00 00.00	E 008 00 00.00
NERUP ²	Tba	S 05 28 34.79	E 009 00 00.00
NIBAK ²	tba	S 05 20 00.00	E 010 00 00.00

• New I-Flex Wpts

Working 5NLC	Existing 5NLC	Latitude	Longitude	Comment
SAVON ³	Tba	S 02 03 28.14	E 010 26 29.45	New waypoint on UR526 (DCT UTAKA)
POLAR ³	tba	S 03 05 44.98	E 010 52 03.57	New waypoint on UR526 (DCT UTAKA)

ii) Within Brazzaville FIR it is acceptable to file in ICAO FPL filed 15 a direct (DCT) segment as follows:

- a) ONPOX DCT GARLA¹
- b) ONPOX DCT ARKOS¹
- c) SAVON³ DCT ARKOS¹
- d) SAVON³ DCT EKBOB²
- e) SAVON³ DCT NERUP²
- f) POLAR³ DCT NERUP²
- g) POLAR³ DCT NIBAK²
- h) ENINA DCT NIBAK²

¹ 5NLC obtained by Accra FIR

² 5NLC obtained by Luanda FIR

³ 5NLC obtained by Brazzaville FIR

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1.5 Luanda FIR

i) Within Luanda FIR new Entry/Exit/FIR boundaries waypoints were established:

- New AORRA Entry/Exit Wpts

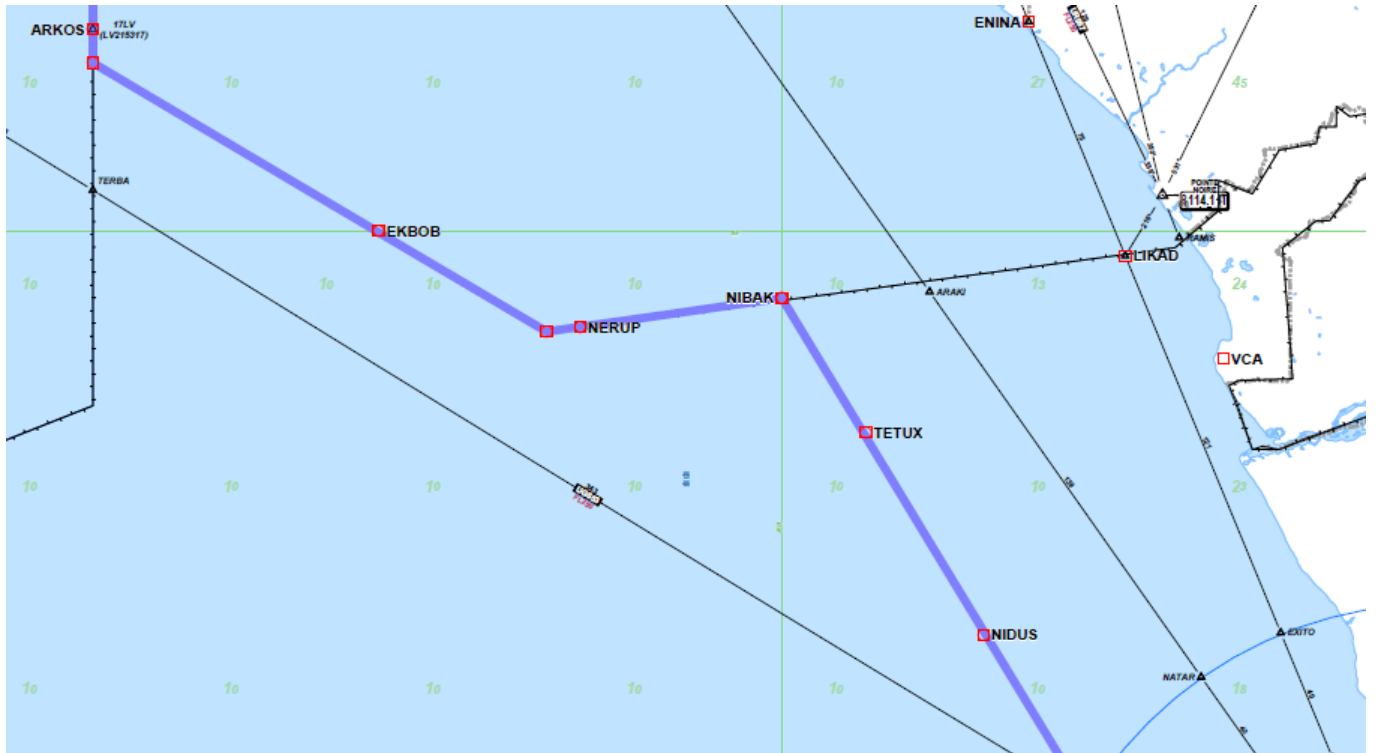
Working 5NLC	Existing 5NLC	Latitude	Longitude
EKBOB ²	tba	S 05 00 00.00	E 008 00 00.00
NERUP ²	tba	S 05 28 34.79	E 009 00 00.00
NIBAK ²	tba	S 05 20 00.00	E 010 00 00.00
TETUX ²	tba	S 06 00 00.00	E 010 25 00.00
NIDUS ²	tba	S 07 00 00.00	E 011 00 00.00

- Rejected Transition¹

Working 5NLC	Existing 5NLC	Latitude	Longitude
“LUA01”	tba	S 04 24 52.23	E 007 00 00.00

ii) Within Luanda FIR it is acceptable to file in ICAO FPL filed 15 a direct (DCT) segment as follows:

- LKAD DCT TETUX²
- LIKAD DCT NIDUS²
- VCA(VOR) DCT TETUX²
- VCA(VOR) DCT NIDUS²



2) New routings

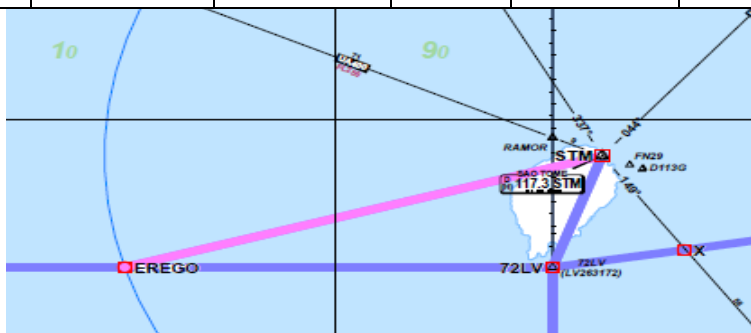
It has been agreed that new routings as listed in items 2.1) to 2.4) below will be implemented effective 2 June 2011 with AIP Supplement published AIRAC 10 March 2011.

This implementation is in accordance with Report of the First Flexible ATS Route Management Workshop held in Dakar, Senegal, 11-13 January 2011

2.1 EREGO⁴ - STM

Proposed route name ; Bidirectional

POSITION 5NLC	3.1.1.1 COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
EREGO ¹	AORRA boundary	N 00 00 00.00	E 005 26 25.09	▲	078° / 258°	80.00NM	Sao Tome (Accra DGAC)
STM	VOR	N 00 22 42.41	E 006 43 01.41	▲			Sao Tome (Brazzaville FCCC/Libreville ACC)

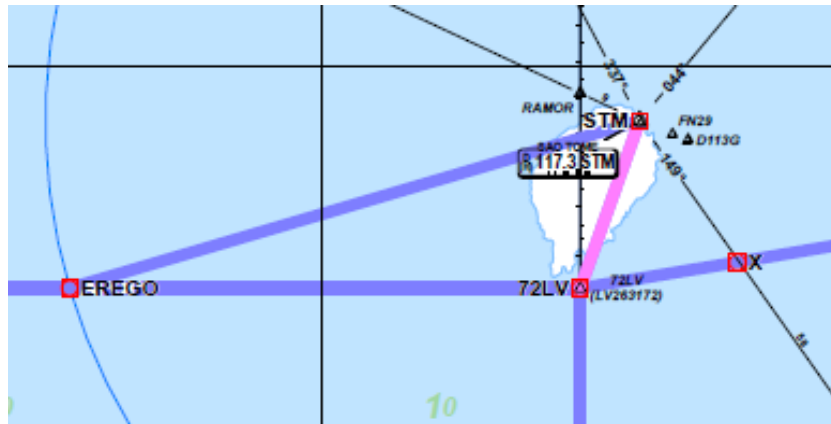


2.2 “72LV” – STM

Proposed route name ; Bidirectional

POSITION 5NLC	3.1.1.2 COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
1. TBA	72LV	N 00 00 00.00	E 006 35 00.00	▲	023° / 204°	23.98NM	Sao Tome (Brazzaville FCCC) / Sao Tome (Accra DGAC)
STM	VOR	N 00 22 42.41	E 006 43 01.41	▲			Sao Tome (Brazzaville FCCC)

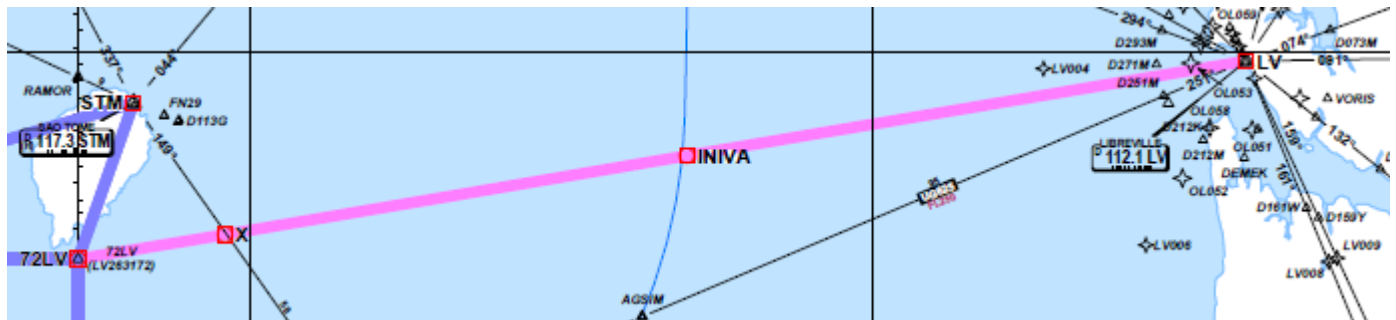
⁴ 5NLC obtained by Accra FIR



2.3 “72LV” - LV

Proposed route name ; Bidirectional

POSITION 5NLC	3.1.1.3 COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
1. TBA	72LV	N 00 00 00.00	E 006 35 00.00	▲	084°/264°	21.80NM	Sao Tome (Brazzaville FCCC) / Sao Tome (Accra DGAC)
2. TBA	X UA400	N 00 03 39.23	E 006 56 27.27	▲	084°/264°	58.36NM	Sao Tome (Brazzaville FCCC) / Sao Tome (Accra DGAC)
INIVA ⁵	UTA boundary	N 00 13 26.14	E 007 53 53.82	▲	084°/263°	91.66NM	Sao Tome / Libreville ACC (Brazzaville FCCC) / Sao Tome (Accra DGAC)
LV	VOR	N 00 28 47.40	E 009 24 07.10	▲			Brazzaville FCCC



2.4 ONPOX – LV

Proposed route name ; Bidirectional

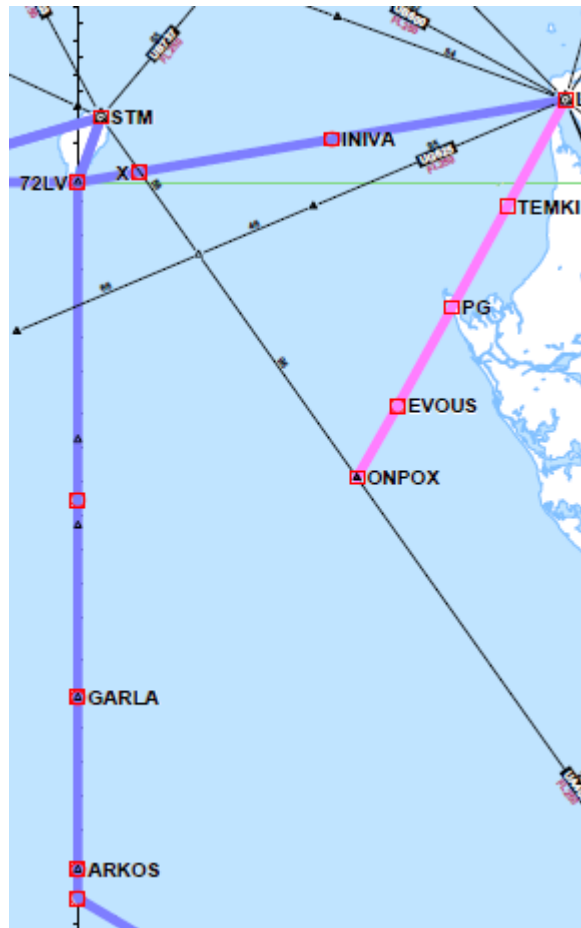
POSITION 5NLC	3.1.1.4 COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
LV	VOR	N 00 28 47.40	E 009 24 07.10	▲	212°/033°	82.0NM	Brazzaville FCCC (Libreville ACC)
TEMKI							
PG	VOR	S 00 43 43.60	E 008 44 50.90	▲	213°/033°	40NM	Brazzaville FCCC (Libreville ACC)
EVOUS ²	Libreville ACC/Sao Tome TMA	S 01 18 48.91	E 008 25 21.83		213°/033°	27.8NM	Brazzaville FCCC (Libreville ACC) / Sao Tome
ONPOX		S 01 43 12.00	E 008 11 48.00	▲			Brazzaville FCCC

Note: Within Brazzaville FIR it is acceptable to file in ICAO FPL filed 15 a direct (DCT) segment as follows:

¹ 5NLC obtained by Accra FIR

⁵ 5NLC obtained by Libreville UTA

- a) ONPOX DCT GARLA¹
- b) ONPOX DCT ARKOS¹



- 3) Piarco (TTZP); Cayenne Rochambeau (SOOO); Dakar (GOOO) and Sal (GVSC) FIR's DCT segments

It has been reiterated that new routings as listed in items 1) to 2) of the Report on First Flexible ATS Route Management Workshop held in Dakar, Senegal, 11-13 January 2011, will be implemented effective 2 June 2011 with AIP Supplement published AIRAC 10 March 2011.

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