

**INTERNATIONAL CIVIL AVIATION ORGANIZATION
WESTERN AND CENTRAL AFRICA OFFICE**



**EXECUTIVE SUMMARY JOINT SAT MISSION REPORT BY
Francois –Xavier SALAMBANGA Regional Officer Communication, Navigation and Surveillance,
ICAO Western and Central African Office**

(Luanda, Angola 01-05 May 2013)

1.1 Purpose of Mission

2

1.1.1 The purpose of the Mission in Luanda, conducted from 01 to 05 May 2013, was to assist Angola Empresa Nacional de Exploração de Aeroportos e Navegação Aérea (ENANA) implement ADS-C/CPDLC in Luanda FIR in accordance with the AFI regional Surveillance strategy and implementation Plan. This implementation is a requirement of Decision 1 of the SAT/Fit 7th Meeting as well as the mission itself.

1.1.2 The mission was conducted by **Albert Aidoo TAYLOR**, Operations Director GCAA, SAT Chairperson assisted by **Peter RAW**, Manager AS & ATM FL/Ops, Emirates and **François-Xavier SALAMBANGA**, ICAO Regional Officer CNS member of the SAT Secretariat team.

1.2 Transport of the mission

1.2.1 The transport of the mission team was sponsored by Emirates Airline.

1.3 Work Programme

1.3.1 Agenda item 1: *General considerations*

- Global Operational Concept
- Surveillance and Communication systems to support PBN: ADS-C and CPDLC

1.3.2 Agenda item 2: *Regional requirements*

- **AFI/ANP and APIRG provision:** Strategy of implementation of surveillance systems in AFI Region
- **Outcome of SAT meetings:** Decision SAT/FIT7/1

1.3.3 Agenda item 3: *Benefits of ADS-C CPDLC operation for remote low density air traffic area*

- **Operational:** Seamless service provision, improved safety, optimized routes, iFlex,
- **Economic:** enhanced fuel and time saving,
- **Environmental:** decreased emission of CO₂

1.3.4 Agenda item 4: *Status of implementation of ADS-C/CPDLC within the Luanda neighboring FIRs*

- Abidjan (Dakar FIR)
- Accra FIR
- Atlántico FIR
- Brazzaville FIR
- Johannesburg FIR
- Windhoek FIR

1.3.5 Agenda item 5: *Feedback from Airspace User (Emirates Airlines)*

1.3.6 Agenda item 6: *Way and Steps forward: Development of a project for the implementation of ADS-C/CPDLC in Luanda FIR*

- Term of reference
- Funding sources/mechanisms
- Support from ICAO

1.3.7 Agenda item 7: *Any other business*

1.4 Meetings held

3

1.4.1 The following meetings and visit were undertaken by the mission:

- **Plenary meeting with Twenty Nine (29) participants** from various areas (ATM, AIM, CNS...);
- **Technical meeting with Six (06) participants** including the ENANA ADS-C/CPDLC project manager assisted by personnel from ATM, CNS, AIM sections;
- **Coordination meeting with the Luanda CAFSAT VSAT Station project manager;**
- **Courtesy visit to INAVIC, the Angola CAA with the participation of two representatives of Angola ministry for transport and;**
- **Technical visit to Luanda ACC;**
- **Technical visit to Luanda AIS and Aeronautical Meteorology units;**
- **Two specialized briefing and debriefing meetings with the Board of ENANA.**

The lists of official met and participants to these meetings are attached at the main mission report.

The issues discussed under the agenda items focussed mainly on the way to successfully implement ADS-C/CPDLC taking into consideration the experience gained in the SAT Region in the matter.

1.4.2 **The plenary meeting** gave the participants awareness on:

- Surveillance and the Global Operational Concept in the framework of new GANP;
- ADS-C and CPDLC, Surveillance and Communication systems to support PBN;
- Regional requirements for Surveillance and Communication systems:
 - ✓ AFI/ANP and APIRG provision: Strategy of implementation of surveillance systems in AFI Region
 - ✓ Outcome of SAT meetings: Decision SAT/17/1 pertaining to the implementation of ADS-C/CPDLC in Luanda FIR;
- Benefits of ADS-C CPDLC operation for remote low density air traffic area; example of Accra FIR:
 - ✓ Operational: Seamless service provision,
 - ✓ Improved safety, optimized routes, iFlex,
 - ✓ Economic: enhanced fuel and time saving, increased payload,
 - ✓ Environmental: decreased emission of CO₂;
- Status of implementation of ADS-C/CPDLC within the Luanda neighbouring FIRs:
 - ✓ Abidjan (Dakar FIR)
 - ✓ Accra FIR
 - ✓ Atlántico FIR
 - ✓ Brazzaville FIR
 - ✓ Johannesburg FIR
 - ✓ Windhoek FIR
- Feedback on ADS-C/CPDLC from Airspace User (Emirates Airline).

1.4.3 The **technical meeting with ENANA ADS-C/CPDLC project manager** and his colleagues reviewed the status of the on-going project of implementation of ADS-C/CPDLC in particular:

- The objectives, the consistency and the expected benefit of the Project;
- The current status of Implementation;
- The operational and preliminary requirements for the implementation;
- Interoperability with the neighbouring similar systems.

The meeting noted that the project management needs to be better organized and formulated the following recommendation:

Recommendation1: Organization of the management of the project of implementation of ADS-C/CPDLC in Luanda FIR

That the following actions be taken:

- a) *Formal nomination and establishment of a Project Team comprising as core members ATM, AIS/AIM, CNS, MET personnel and including when necessary safety, financial and human resource personnel;*
- b) *Development of a plan of action aiming to ensuring the organized management of the project and comprising:*
 - ✓ *Short and Medium term planned Actions,*
 - ✓ *Long term planned Actions,*
 - ✓ *Timeframe of the project,*
 - ✓ *Operational and preliminary prerequisites,*

✓ *Interoperability,*

✓ *Training and familiarization visit to neighbouring centres to understand ADS-C/CPDLC basic technical and operational principles.*

- c) *ENANA Approve and implement the draft Action Plan of Action for the implementation of ADS-C/CPDLC in Luanda FIR as attached at **Appendix B** to this report.*

1.4.4 During the **meeting with the person responsible of the CAFSAT VSAT station project** to be implemented in Luanda the mission was briefed on the status of implementation of the station and on the main upcoming activities:

- The station antenna is already at Luanda harbour;
- Factory acceptance was planned to take place during the week from 6 to 12 May 201.

However Atlântico centre with which the ATS/DS voice link is to be established had not yet been updated on the evolving status of the project and Luanda was not aware on any progress made by Brazil to upgrade the Recife station. The mission therefore agreed on the following recommendation:

Recommendation 2: Coordination on the implementation of the CAFSAT VSAT Station in Luanda

That,

The project manager develops a short plan of action including the necessary coordination actions to be taken between ENANA, Brazil and INSA.

*The proposed draft Plan of Action on the implementation of the Luanda CAFSAT VSAT Station attached at **Appendix C** to this report be approved and implemented by ENANA.*

14.5 The **mission visited Luanda ACC in which ADS-C/CPDLC system** is planned to be installed and operated. Taking the opportunity to access the aeronautical communication the meeting noted that except the Luanda/Recife ATS/DS circuit temporary implemented alternative phone, all the AFI planed ATS/DS links from Luanda are implemented and were serviceable with a good quality

1.4.5.1 When assessing the aeronautical mobile service the mission noted that Luanda ACC is managing the whole FIR with HF radio system. In particular the continental airspace with a complex crossing routes structure is experiencing lack of VHF coverage despite the VSAT remote VHF station implemented by ENANA.

1.4.5.2 This situation is critical and should be tackled as a matter of urgency. Therefore the resolution of this lack of VHF coverage in the continental airspace should be the highest priority of ENANA prior to the implementation of any other Air Navigation Service project. The mission drew the attention of ENANA high level (CEO and Board members) on this critical situation and obtained the commitment to urgently tackle the issue and to revert by report to SAT, ICAO and the users for an assessment mission after completion of the remedial measures. The mission formulated the following recommendation:

Recommendation3: Immediate actions to be undertaken to solve the lack of VHF air ground communication in the Luanda continental airspace

That,

As a matter of urgency, ENANA plan adequate actions and take immediate appropriate measures in order to minimize the risk of major incident due to the lack of air/ground communication within the Luanda continental airspace. This plan will comprise and will not be limited to the following identified actions:

- a) *Development of a Plan of Action including:*
 - ✓ *Immediate and medium actions to be undertaken to clear out this deficiency,*
 - ✓ *Time schedule of the Plan with check points;*
- b) *Nomination of a Joint team involving operational and technical personnel to regularly (daily/weekly/monthly) assess the status of implementation of the plan and propose appropriate additional actions if any;*
- c) *Regular follow up of the status of implementation of the plan by the CEO or by a board member,*
- d) *Information to the users, to APIRG Community with copy to SAT members and to ICAO on the progress made by ENANA in the resolution of this deficiency.*

*ENANA approve and implement the draft Plan of Action on the restoration of VHF coverage in Luanda continental airspace as attached at **Appendix D** to this report.*

2.1 Result obtained by the mission

2.1.1 The meetings and discussions conducted during this joint mission were fruitful and the following results were gained:

- Establishment of a work programme for the implementation of ADS-C/CPDLC in Luanda FIR as well as the implementation of the CAFSAT VSAT station;
- Advise ENANA on experience gained in the implementation of ADS-C/CPDLC in the SAT Region;
- Contribution to the promotion and harmonization of ADS-C/CPDLC operation and procedures based on the regional requirements and SAT conclusions/decisions;
- Increased participants' awareness on current and future planning and implementation of ATM systems and infrastructure in the Region in the framework of ICAO ASBU block upgrades developed by the 12th AN Conference;
- Agreed ENANA high level commitment to undertake the appropriate and immediate action to mitigate the lack of VHF coverage in the Luanda FIR continental airspace

2.1.2 The involvement of the stakeholders to seek improving and the remedial actions appears to be the corner stone of the successful implementation of the recommended plans of Action.

2.2 Implementation of the recommendations

2.2.1 The successful implementation of ADS-C/CPDLC system in Luanda FIR will fit in the harmonized and optimized SAT airspace for the benefit of the users. The management of this project may require coordination actions to be taken by a Project Team tasked to implement a consolidated plan of Action within a time frame.

2.2.2 The need for action plan also applies to the Project for the implementation of the CAFSAT VSAT in Luanda. In this regards a teleconference involving ENANA, Atlántico, the provider, SAT Chairperson and ICAO WACAF should facilitate coordination for the implementation of the ATS/DS voice circuit between Luanda and Recife.

2.2.3 Prior to any action, the mitigation of the lack of VHF coverage of Luanda FIR continental airspace requires a rigorous planning and a close follow up of the appropriate suitable urgent actions to be conducted by ENANA in this matter.