



Agenda Item 4

Air Navigation Matters

4.2 Follow-up on the implementation of the NAM/CAR Regional Performance-Based Air Navigation Plan (RPBANIP) in Eastern Caribbean

SYSTEM AUTOMATION PROGRESS

(Presented by France)

SUMMARY	
French ATM systems will be upgraded for new one including more automation. For Antilles Guyane, these upgrades will start in 2015 in French Guyana, and should end in 2020 in FWI.	
Strategic Objectives	<i>This information paper is related to Strategic Objectives: A. Safety – Enhance global civil aviation safety C. Environmental Protection and Sustainable Development of Air Transport</i>

1. Introduction

1.1 The Direction des Services de la Navigation Aérienne (French air navigation service provider, belonging to French DGAC) has planned to renew all the French ATM systems from 2014 to 2022. 3 major programs have been initiated :

- 4FLIGHT / COFLIGHT for En Route and Major Airports systems in France (Europe).
- SYSAT for Approaches and main Airports in France (Europe)
- SEAFLIGHT for French Overseas Territories

1.2 These systems will allow advance system automation, in particular in French Guyana and FWI.

2. New ATM Systems in France (Europe)

2.1 COFLIGHT is the new Flight Data Processing system for France (Europe).

2.1.1 COFLIGHT is the new flight data processing system jointly developed by France, Italy and Switzerland. In 2011, the Franco-Italian industrial consortium, comprising Thales ATM and Selex SI, completed the development of the operational first version.

2.1.2 COFLIGHT will constitute the core of the future air traffic management system, 4-FLIGHT, which incorporates the SESAR concepts, the possibility for Free Route (FABEc's airspace strategy : FABEc : Functional Airspace Bloc for Central Europe) and interoperability functions.

2.1.3 It is a 200 Million USD project only for France (150 M€).

2.2 4FLIGHT project is the new ATM system for French ACCs and Major Airports (including Paris). It corresponds to the first step of SESAR (Single European Sky ATM Research) European modernisation program for France. It is a migration from present ATM system (CAUTRA) to an all electronic stripless environment, including ERATO tools (En-Route Air Traffic Organizer).

2.2.1 It is realised via a partnership between THALES and DSNA. 4-Flight is scheduled to be produced through the implementation of three "Building Blocks": Initial, Intermediate and Operational.

2.2.2 The Initial Build Block has been successfully demonstrated in November 2012 (13 months after the initial signing of the contract).

2.2.3 The intermediate Build Block will be delivered in 2014, in the two test-bed centres, ACC East (Reims) and ACC South-East (Aix-en-Provence). These centres will pave the way for the first operational step in these two centres, to be delivered by winter 2016-2017. The demonstration yielded some interesting results:

2.2.4 4FLIGHT is a 650 Million USD project (500M€).

2.3 SYSAT: is the program for renewing the ATM systems for Approaches and main Control Towers (Toulouse, Lyon, Marseille, ...).

2.3.1 The purpose of this programme, launched in September 2011, is to modernize the air traffic management system used in those approach centres and control towers in France and Corsica where 4-Flight will not be deployed. SYSAT will integrate the changes in the organisation of lower airspace. It will be based on existing industrial systems. The deployment timetable will be tightly coordinated with the 4-Flight deployment schedule, from 2015 to 2022. Several demonstrators are planned in different places in France in 2014 with already selected contractors (NavCanada, Frequentis, Thales, INDRA, DFS IN, C&S). Initial Planned Budget: 66 M USD (50 M€).

3. French Overseas Modernisation Programme

3.1 A modernization programme is on-going for overseas French territories in CNS and ATM fields. Major investments have been made for French Guyana and FWI:

- A new control center in Guadeloupe, in operation since November 2012 (20M€).
- A new control tower in Cayenne, French Guyana (12M€), planned in operation by end 2013.
- Total renew of HF antennas (2.5M€), in operation since 2011.
- ADS-C CPDLC in Cayenne French Guyana (Cacao1), in operation since 2011.
- Replacement of the 3 Cat I ILS : French Guyana in 2012, Martinique in 2013 (on going, Fligh check end of June 2013), Guadeloupe June 2014.
- Planned replacement of all ATM systems in Overseas Territories, from 2015 to 2022: SEAFLIGHT programme.

4. ADS-C CPDLC in Cayenne, French Guyana

4.1 **CACAO1 project:** CPDLC ADS-C Cayenne Oceanique 1. This is the preliminary phase of ATM modernization program in Cayenne, French Guyana. In May 2011, the system was declared in operation after one year trials, allowing ADS-C surveillance and CPDLC over Atlantic Cayenne Rochambeau FIR, with FANS1/A equipped aircrafts. This was a real improve for safety in that region : better representation of the air traffic, reduction of HF communications and position error reportings, news tools for ATCOs (safety nets and prediction tools). This project was limited to ADS-C CPDLC due to budget restrictions. ADACEL Canada is the supplier of this system called AURORA and that is really appreciated by ATCOs.

5. SEAFLIGHT

5.1 **SEAFLIGHT is a program to replace the ATM systems in French overseas territories.** A call for tender was set in 2012, 3 contractors have been selected: INDRA, THALES, and ADACEL. For each French overseas territory, a competition will be organized within these 3 suppliers on a more detailed set of requirements, adapted to that territory (French Guyana, La Réunion Island, Martinique, Guadeloupe, Nouvelle Calédonie, possibly Saint Pierre et Miquelon). Tahiti has already been upgraded 3 years ago outside this program (Thales Eurocat 500 system).

5.2 **First site for SEAFLIGHT program is French Guyana (project CACAO2).** The system will provide integrated flight and surveillance system with full electronic stripping, ADS-C/CPDLC, the capability to process Radar (monoradar and MRT), ADS-B, MLAT, and other functions as safety nets, recording and replay facilities, simulator, etc. The system will be AMHS compliant, and will have advanced automation capabilities (AIDC). It will be used for aerodrome, approach and oceanic control.

5.3 **Martinique and Guadeloupe ATM systems** will be upgraded around 2018 depending on budgets available. Both Martinique and Guadeloupe will have the same system (could not be the same as in French Guyana). This system will be an electronic stripping system, with automated functionalities (silent transfers between Martinique and Guadeloupe, automatic transfers and coordination. The system will integrate both an FDP and a surveillance system with ADS-B, MLAT, and radar capabilities (not ADS-C).

6 Conclusion

6.1 Replacement of ATM systems is planned in Antilles Guyane from 2015 (Cayenne French Guyana) to 2018 (FWI).

6.2 These systems will allow advanced automatic coordination via AIDC over AMHS/AFTN.

6.3 Short term work has to be done between Cayenne Rochambeau FIR, DAKAR, ATLANTICO and PIARCO FIR (oceanic coordination between Oceanic ATM systems that use ADS-C CPDLC). Work has already started between Cayenne and Dakar. Moreover, successful trials were conducted between New Zealand and Tahiti Eurocat500 system (the other French oceanic control center).

6.4 Later work should be managed within E/CAR (first within FWI, then between FWI and Trinidad).

6.5 Benefits expected from these automations are reduced separation minima, decreased workload, increased capacity, more efficient flight operations, and enhanced safety.

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