

SUBJECT : Implementation of ADS-B in airspace managed by Tahiti Faa'a air traffic control organism for Flight Information and Alert Services (Tier3)

1 DEFINITION OF ADS-B

Automatic Dependent Surveillance Broadcast (ADS-B) is a means by which aircraft can automatically transmit and / or receive data such as identification, position and other data, as required, over a data link operating in broadcast mode.

2 USE IN FRENCH POLYNESIA

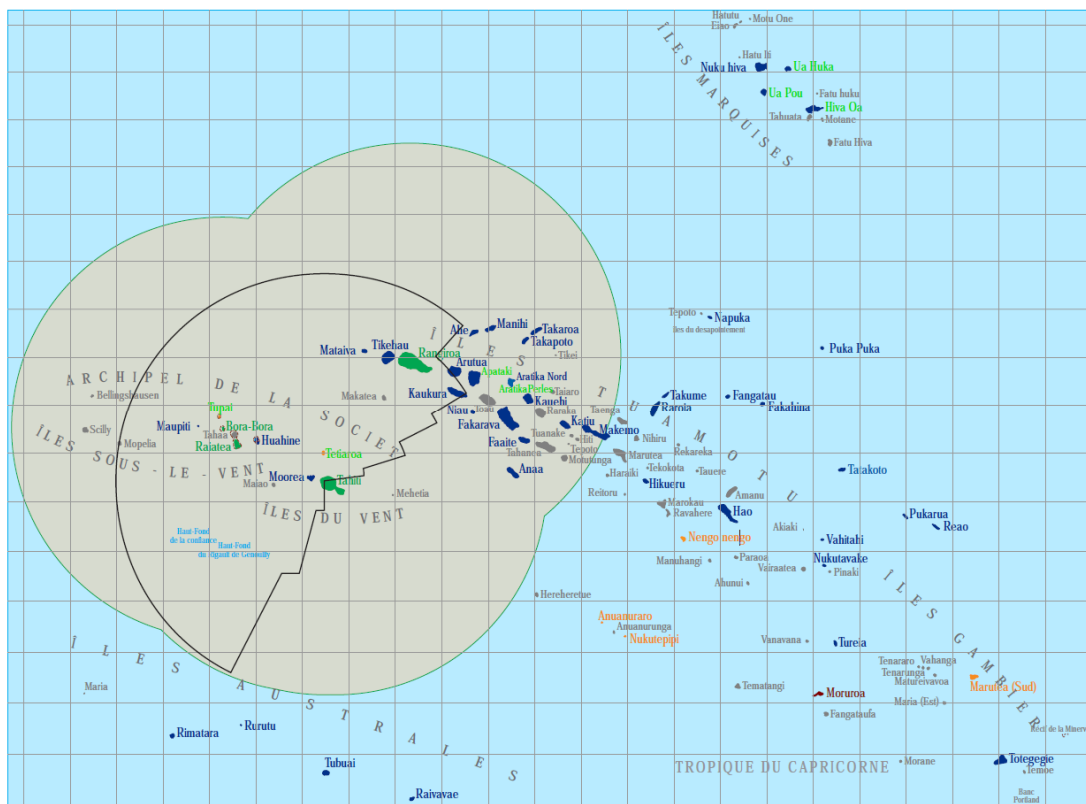
The General Directorate of Civil Aviation (DGAC), which provides ATS services in French Polynesia, has installed five ADS-B receiving ground stations in Tahiti, Moorea, Bora Bora and Rangiroa.

The use of ADS-B information to provide Flight Information and Alert services has been validated. It allows, for equipped aircraft, to detect errors in lateral track, flight level or coordination, and to better monitor trajectories in the context of information and alert services.

At this stage, the use of ADS-B information has no impact on the aircraft separation method which remains based on:

- Radar separation in the associated coverage area (5 Nm)
- Procedural separation outside the radar coverage area

3 ADS-B VISIBILITY AND RADAR COVERAGE MAP



4 CONSEQUENCES ON AIRCRAFT OPERATORS

Aircraft operators wishing to operate in the FIR will be subject to specific requirements with respect to ADS-B. This paragraph 4 recalls these requirements, some of which will be applicable from the deadlines mentioned in point a) here below depending on the considered airspaces.

a) Equipment requirements

3rd of October 2017 decree imposing the obligation to carry equipment providing an automatic dependent surveillance function in broadcast mode in the airspace of French Polynesia states that:

- from 1 January 2019, aircraft flying above flight level 195 shall be equipped with equipment providing an automatic dependent surveillance function in broadcast transmission mode;
- as of 1 January 2022, aircraft operating in the NTTT Flight Information Region shall be equipped with equipment providing an automatic dependent surveillance function in broadcast transmission mode.

The following aircraft are exempt from these equipment obligations:

- State-owned, leased or chartered aircraft;
- Aircraft owned by foreign states;
- Aircraft in an emergency situation;
- Aircraft carrying out medical evacuations.

However, they must notify their intentions to Air Navigation service organism with 24 hours' notice when flight planning allows.

b) Emission restriction

The on-board equipment periodically broadcasts the state vector (position and speed) and other information from on-board systems in a format suitable for receivers with ADS-B receiving capability.

The provisions of paragraph ENR 1.6.3 of the AIP PAC P are recalled below:

“An aircraft operating in the Tahiti FIR with ADS-B equipment on a 1090 MHz extended squitter (1090ES) will disable ADS-B transmission except:

- a) If the accuracy and integrity of the position information it transmits is consistent with the transmitted value of the position quality indicator; or*
- b) If it still gives a value of 0 (zero) for at least one of the position quality indicators (NUCp, NIC, NACp or SIL); or*
- c) If the operator of the aircraft has received an exemption from the French Civil Aviation Authority in French Polynesia (SEAC / PF)*

This equipment is certified according to the requirements defined in one of the following documents:

- AMC 20-24 published by the European Aviation Safety Agency, or
- AC No. 20-165A of the Federal Aviation Administration, or
- Appendix XI of CAO 20.18 of the Australian Civil Aviation Safety Authority, or
- Any other certification standard which ensures a level of performance at least equivalent to those mentioned above”.

c) Flight plans

The ADS-B equipment shall be notified in field 10b of the Flight Plan in accordance with the provisions applicable to the ICAO flight plan described in the "Procedures for Air Navigation Services - Air Traffic Management" (PANS-ATM, Doc 4444 ICAO).

a) Equipment and SSR mode S capabilities:

E: Transponder - Mode S, with the capability of transmitting aircraft identification, pressure altitude and extended squitter (ADS-B)

L: Transponder - Mode S, with capability of transmitting aircraft identification, pressure altitude and extended squitter (ADS-B) and enhanced monitoring capability

Note: Enhanced monitoring capability is the ability of the aircraft to transmit downlink data from the aircraft using a Mode S transponder.

b) Equipment and ADS-B capabilities:

B1: ADS-B with capability ADS-B "out" on specialized frequency 1090 MHz

B2: ADS-B with capability ADS-B "out" and "in" on specialized frequency 1090 MHz

c) Information to be added **in field 18** of the ICAO Flight Plan:

1) SUR / 260 if the capacity of the ADS-B equipment meets the specifications of TSO-C166, issued by RTCA, INC. DO-260

2) SUR / 260B if the capacity of the ADS-B equipment meets the specifications of TSO-C166b, issued by RTCA, INC. DO-260B

3) CODE /: address of the aircraft expressed as a six-digit hexadecimal alphanumeric code (for example: "CODE / 3A46B1")

d) Identification of the aircraft

A flight code (FLTID) which is an exact replica of the identification of the aircraft entered in field 7 of the ICAO flight plan must be programmed into the transponder or the flight management system (FMS) so that this aircraft can receive surveillance services. Airlines must use the three-letter ICAO airline code and not the two-letter IATA code. In addition, field 10 should indicate the ADS-B capability on the ICAO flight plan.

e) Phraseology related to ADS-B

The phraseology used is based on DOC 4444 Chapter 12 "Conventional Expressions"

Identification:

"Transmit ADS-B IDENT" Enables IDENT Display on the Controller Screen

"RE-Enter ADS-B aircraft identification" to correct an incorrect identification

Verification of ADS-B capacity:

"Advise ADS-B capability"; "ADS-B Transmitter"; "ADS-B Receiver"; "Negative ADS-B"

Wrong information:

"Stop ADS-B Transmission» to request to stop ADS-B transmitter

"Stop ADS-B altitude transmission, wrong indication" incorrect altitude indication

Termination of ADS-B service:

"Identification Terminated [due reason]"; "will shortly lose identification"; "Identification Lost»

Emergency message:

Emergency messages can be sent by the crews: absolute emergency, communications failure, Hijack, minimal fuel, medical evacuation flight.

f) Distress situation

An aircraft in flight is in a state of distress when it is in grave and / or imminent danger and requires immediate assistance.

The pilot of the aircraft applies the procedures described in § GEN 3.6 of the AIP-PAC, displays **Code 7700** on the transponder and selects the emergency mode on the automatic dependent surveillance system / controller-pilot communication by data link (ADS / CPDLC).

g) Emergency situation

An aircraft in flight is in a state of emergency when its safety or that of a person on board is threatened without the need for immediate assistance.

The pilot of the aircraft applies the procedures described in § GEN 3.6 of the AIP-PAC, displays **Code 7600** on the transponder and selects the emergency mode on the automatic dependent surveillance system / controller-pilot communication by data link (ADS / CPDLC).

5 DATE OF IMPLEMENTATION

Expected at the end of 2018, **the date of implementation** of ADS-B in the TAHITI FIR Phase 1 (NTTT) sector for Flight Information and Warning Services (TIER 3) will be announced by a **NOTAM**.

ATS organizations may request equipped users to provide specific position reports or distance measurements at strategic points in the airspace, or to use various ADS-B transmitter functionalities (ident, emergency codes, change of identifier, etc.).

6 ADDITIONAL INFORMATION

An extension of the ADS-B / VHF coverage on almost all the islands of French Polynesia is being studied with the installation of 7 new ground stations, allowing the Tahiti Faa'a ATS organization to provide monitoring, assistance and then vectoring services to airspace users, using an ADS-B separation minimum.

7 REFERENCE DOCUMENTS

- SERA
- Doc 4444 Chapter 12
- AIP PAC P
- Bylaw of carriage obligation published at the JORF of October 3, 2017
- AMC 20-24 edited by the European Agency for Air Safety
- AC N°. 20-165A of the Federal Aviation Administration
- Appendix XI of CAO 20.18 of the Australian Civil Aviation Safety Authority