

TABLE OF CONTENTS

ABOUT THE AUTHOR iii

BE ADVISED v

- 1 INTRODUCTION..... 1
- Buyer Beware 4
- Myths and Other Frequently Asked Questions 8
- 2 CHECKLISTS
- 3 BEFORE ADS-B SURVEILLANCE
- 4 WHAT AND WHY OF ADS-B
- 5 ADS-B AIRSPACE
- 6 ADS-B INFRASTRUCTURE
- 7 WHAT THE AIR TRAFFIC CONTROL
- 8 WHAT DO YOU NEED FOR
- 9 BUY NOW, OR BUY LATER
- 10 EQUIPMENT SELECTION
- 11 EQUIPMENT EXAMPLES.....
- 12 INSTALLATION PLANNING
- 13 PILOT CONTROLS, INDICATORS
- 14 AFTER THE INSTALLATION
- 15 FAA ADS-B PERFORMANCE
- 16 LEGACY ADS-B OUT EQUIPMENT
- 17 EXPERIMENTAL AIRCRAFT

CHECKLISTS



DO I NEED OR WANT ADS-B?

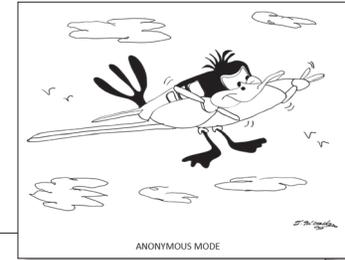
Question	Actions	Notes
Will I fly in US ADS-B airspace?		
Will I fly in Canadian or Mexican airspace?		
Will I get the ADS-B benefits even if I fly outside ADS-B rule airspace?		
Will I get other aircraft to see me on ADS-B IN?		
Will I be able to see other aircraft with full ADS-B traffic?		
Will I get the ATC VFR advisories or traffic in non radar areas?		
Will I use ADS-B as a backup for the transponder?		
Will I get transponder need for my aircraft?		
Will I get better planned maintenance or traffic advisories to the aircraft which make life easier?		
Will I ever fly in ADS-B required airspace but I want other aircraft to see me?		

Anonymous Mode

With ATC radar the FAA could always track you so you never really had anonymity. ADS-B makes it easier to track and find an aircraft and your ADS-B data is easily available to the public as anyone can put up an ADS-B receiver. Organizations are fielding private ADS-B receiver networks and making data available on the web.

If ADS-B is installed the FAA regulations require that ADS-B be on and operating even when not in ADS-B airspace. The ADS-B OUT system (UAT or 1090) is always transmitting your N# or Flight ID and digital address except when a UAT is in anonymous mode. In anonymous mode the N# Flight ID is not transmitted, and a random digital address is transmitted so the ADS-B does not contain the aircraft identification.

The concern over anonymity has been recognized as an issue when the system was conceived. Under pressure from users groups the FAA included a pilot selectable capability



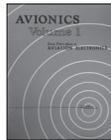
ABOUT THE AUTHOR

John Ferrara brings a unique blend of knowledge and experience to the task of providing a clear and accurate practical presentation on the many aspects of ADS-B. He is a long-time pilot and aircraft owner and holds a degree in electrical engineering from The Massachusetts Institute of Technology.

He started his career at a university research center but succumbed to the lure of aviation and opened a general aviation avionics business. After selling the business he joined Narco Avionics when it was the big name in general aviation avionics and after about 10 years with Narco he joined Cessna's ARC avionics division. Following about 3 years with ARC Cessna he left the avionics world for the military electronics world and spent 18 years at a small company BASE TEN working on various military systems followed by 10 years with the Sarnoff Corporation working on a variety of projects such as digital TV and Satellite imagers. Retirement from Sarnoff meant much more time to pursue aviation interests.

John started flying in 1960, is instrument rated and has about 6000 hours including many hours of flight instructing. He owns and regularly flies a Piper Twin Comanche ADS-B equipped. The aircraft is KTTN Trenton, New Jersey and Washington DC.

John's interest in ADS-B is growing. Although there was a gap in information and filing in the gap he is researching ADS-B John was a technical system. The TSO requirements for ADS-B are FAA and standing. This is Pilot's Guide



Myths and Other Frequently Asked Questions

Use the Index to find more detail on these issues.

Do I ever need a Transponder or ADS-B if I do not fly into the Transponder required airspace 91.215 or ADS-B required airspace 91.225?

Possibly:

- a. Notams for TFRs (Temporary Flight Restrictions) require a squawk code which implies a transponder is required even if the TFR is outside transponder required airspace as specified in the FAR 91.215. ADS-B is not required and there are no known plans (as of this writing) to require ADS-B in TFR airspace not inside ADS-B required airspace. Keep up to date as new requirements are always possible.
- b. A transponder is required to penetrate the ADIZ (air defense identification zone) and for some special flight rules airspace. No known plans for an ADS-B requirement.

Check regulations and notams if you fly in these areas.

Do I still need a transponder after 2020?

- a. YES, if you are flying in Transponder required airspace. Transponder required airspace is almost identical to ADS-B required airspace.
- b. ADS-B can be installed without a transponder if flying in areas where a transponder is not required however there are advantages to having the transponder as TCAS-equipped aircraft will see you.

If I do not fly in ADS-B required airspace is there advantage to have ADS-B OUT?

Yes. ADS-B surveillance and traffic advisories are available wherever there is ADS-B coverage even outside of ADS-B required airspace. ADS-B IN equipped aircraft will see you and you also need ADS-B OUT to receive full TIS-B traffic service.

I have a Mode-S transponder; must I install a 1090 ADS-B OUT?

- a. No, any type transponder is allowed with UAT ADS-B and in some cases a transponder may not be required at all. 1090 ADS-B OUT must be part of a Mode-S transponder.
- b. Some UAT ADS-B installations STC's that listen to transponder transmission for squawk code do not allow Mode-S transponders if the listen mode is used.

Do I need a Mode-S transponder for ADS-B compliance?

- a. NO if using UAT ADS-B OUT. You may have a Mode A/C transponder or a Mode-S transponder. Some UAT equipment may have limitations on transponders they will work with.
- b. If installing 1090 ADS-B OUT it must be integrated into (part of) a Mode-S transponder

Buyer Beware

Some Gotchas which deserve some special awareness and are discussed in detail elsewhere in this book. This summary prepares the buyer/pilot for some of the discussions to follow.

Buying a New Aircraft with ADS-B

ADS-B Equipped does not automatically mean the ADS-B Installed is compliant with January 1, 2020 requirements (FAR 91.225/91.227). Old versions of ADS-B installed legally which are not compliant with January 1, 2020 requirements are installed using the older certification basis. Older approvals have not been re-approved new aircraft can come off the production line and be sold with ADS-B approved FAA approvals that does not meet January 1, 2020 requirements.

You should check that any ADS-B Installed is compliant with the January 1, 2020 requirements.

Buying a Used Aircraft with ADS-B

There are many legacy ADS-B systems legally installed that do not meet the 2020 requirements. Some of these systems may be update to 2020 requirements. The FAA has not invalidated (By airworthiness Directive or other FAA) otherwise required that older systems legally installed be deactivated or removed are still legal. There are also installations which may not have complied with the effect at the time of installation but never the less are in aircraft.

To fly in ADS-B airspace you must have equipment compliant with FAR 91.225/91.227.

