SSF Soaring Safety Foundation

THINGS TO CONSIDER - ICU

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So, assuming a healthy condition of both you and your glider, you get into your ship and you go flying without a care in the world nor a need to deal with the FAA for permission to make your flight nor a need to tell anyone what you're going to do. Maybe you're going cross-country so you've checked the weather. Maybe you just plan to stay around the field, but you've still checked the weather because it might change. Maybe you don't have any crew nor trailer so you want to stay within gliding distance of your home airport, or one from which you can easily arrange an aerotow retrieve, so you tell the towpilot to be alert for a possible call.

But, you do have a care, a care to fly safely, which means you need to look out for other traffic, not just other gliders, but maybe hanggliders, other GA and maybe you're in an area with extensive commercial traffic or business aircraft or aircraft training areas. See and avoid!

A new phrase is detect and avoid. That's what the airlines and some GA have with TCAS, a means to electronically detect other aircraft that are equipped with transponders which respond to the TCAS interrogation. It's the transponder world, something many glider people don't participate in because we have an exemption, along with balloons and airplanes without communication transceivers, to fly up to 18000' without transponders.

Some are voluntarily installing transponders so they can be seen by TCAS-equipped aircraft. Reno, NV has a special code of 0440 for gliders and towplanes pulling gliders to use without contact/assignment with/from ATC. Other areas are working to arrange something similar. There's no doubt, transponders have come to gliders because we see the advantage of having something that enhances the ability of others to see us, that is, electronically detect us first to aid in visual sighting. We all know how difficult it is for us to see other traffic; ditto for us being seen by other traffic.

For over ten years SSA has been in the forefront of a new method for detect and avoid; there's an NPRM out now about it with implementation planned to take place over a number of years, having already begun is a few small areas, with full development around 2020. It's called ADS-B, which means Automatic Dependent Surveillance - Broadcast. There're lots of other acronyms to go with that one: ADS-R, TIS-B, FIS-B, GBT just for starters.

So why talk about this in an SSF Safety/Training item in SOARING? To safely use the growing cadre of electronic equipment in your glider, you need to study the manuals ahead of time. It's no good to start to find out how it works on your first flight with it. You need to be looking out for other traffic! Study the manual and 'play' with the equipment while on the ground until you know how it works and can operate it without your constant attention interfering with your lookout responsibility.

And that brings us back to ADS-B. Present units are very expensive, but new ones on the horizon will be affordable, IMHO, even less than $1200 for ADS-B transmit only. The

main advantage ADS-B has over TCAS/Transponders is that with ADS-B, you don't need to be interrogated, you transmit your signal continuously. And, you don't need to have expensive TCAS to be alerted to other equipped traffic if you have an ADS-B transceiver and display; you'll see on your display other equipped traffic broadcasts.

There are two frequencies for ADS-B in the USA:

- 1090MHzES, which is a transponder with extended squitter capability, meaning it can send its position data without being interrogated

- UAT, at 978MHz, which is a stand-alone device, not part of a transponder, sending out a signal which has far fewer limitations than 1090ES does.

How can I see 1090 if I have UAT and vice versa? That's where GBTs come in. They will receive both signals and broadcast them both which is where ADS-R comes in; it is the rebroadcast of the two signals so that whichever type ADS-B one has installed, either signal can be received, either directly from a similarly equipped aircraft or from GBTs for aircraft with the 'other' system. In addition, the GBTs will receive the interrogation responses of transponder-equipped aircraft without ADS-B and broadcast those signals. Is it complex? What do you think we've been doing for the past years in RTCA meetings?

ADS-B Automatic Dependent Surveillance - Broadcast
ADS-R Automatic Dependent Surveillance - Rebroadcast
ATC Air Traffic Control
ES Extended Squitter
FIS-B Flight Information Service - Broadcast
GBT Ground Based Transceiver
IFR Instrument Flight Rules
MHz Megahertz, the frequency being discussed
NPRM Notice of Proposed Rule Making
TCAS Traffic alert and Collision and Avoidance System
TIS-B Traffic Information Service - Broadcast

So, the point of this piece is not just to tell you a little about upcoming goodies, but to remind you: Your primary responsibility as a pilot to look for traffic is not taken away because you are on a IFR flight plan, nor if you have TCAS, nor if you have a transponder, nor if you have ADS-B. Aids to the visual acquisition of traffic not only include ATC who may alert you to traffic, but also all the electronic newbies. However, no matter how advanced your electronic equipment, you really need to understand how to use it prior to your first flight with it so you don't compromise your responsibility, and need, to look out by trying to figure out how it works on that first flight.