



Safety Reminder Message

- **Safety Subject:** Operation of SSR Mode C by General Aviation VFR Recreational Flights
 - **Origin:** European Air Navigation Service Provider
 - **Date:** 13/10/2010
 - **Distribution:** Aviation Safety Professionals
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SYNOPSIS

A European ANSP has requested that pilots of General Aviation (GA) VFR recreational flights are reminded of the positive safety effects that the operation of SSR Mode C (when fitted) offers themselves, other airspace users and ATC/FIS providers.

GUIDANCE ON THE OPERATION OF SSR MODE C

The operation of SSR Mode C is covered, inter alia, by the following:

- ICAO Doc 8168, PANS OPS Vol I, 1.1.3 states that, *“When the aircraft carries serviceable Mode C equipment, the pilot shall continuously operate this mode, unless otherwise directed by ATC”*.
- European General Aviation Safety Team (EGAST) Collision Avoidance Safety Promotion Leaflet (GA1): *“If ATC do not allocate you with a code, use code 7000 (with Mode C), and only switch it off if instructed”*
- EUROCONTROL Guidance Notes for GA Pilots, No 11, ‘Getting the Most from Your Transponder’ states, *“the transponder should always be switched on, to ALT if fitted, with an appropriate code, even when it is not intended to contact a radar service. ...”*
- National AIPs. In some states the AIP mandates the operation of Mode C (and in some cases Mode S) when flying VFR outside CAS.

ANALYSIS

Notwithstanding any local differences notified in National AIPs for the carriage and operation of transponders, it is generally recognised that, when fitted and operated, the use of Mode C (verified or un-verified), provides the following safety benefits:

- It preserves the full effectiveness of Safety Nets such as Airborne Collision Avoidance Systems (ACAS) and ground-based ATC Short Term Conflict Alert (STCA):
 - **ACAS:** It highlights the GA aircraft’s presence to other mainly commercial air transport aircraft which carry ACAS.
Note: SSR Mode A only transponders are not detected by ACAS whereas Mode A/C transponders are detected and ACAS will generate both Traffic Advisories (TAs) and Resolution Advisories (RAs) when Mode C is selected but only TAs if no altitude is being reported.
 - **STCA:** They enable controllers to provide timely warnings of potential conflicts to other aircraft receiving a service (depending how STCA is configured).

- It also helps controllers and flight information officers to enhance the level of service they can provide to all users by:
 - Observing the aircraft's altitude/flight level automatically - thus improving their situational awareness and reducing R/T workload.
 - Providing better and more concise traffic information to all flights which are in two-way contact with ATC (or FIS).
 - Preventing occurrences such as airspace infringements.
 - Permitting the full functionality of SSR height/FL filtering features in ATC systems to be used to de-clutter radar displays.

YOUR ATTENTION IS REQUIRED

- Pilots of General Aviation VFR recreational flights are requested to note the subject and follow the instructions or advice in AIPs, guidance materials etc related to the use of SSR Mode C.
- Air navigation services providers are invited to note the issue and share any relevant operational experiences concerning the issue described.

FURTHER READING

- ICAO Doc 8168, PANS OPS Vol I.
- National AIPs.
- EGAST Collision Avoidance Safety Promotion Leaflet (GA1) - www.easa.europa.eu/essi/egastEN.html
- SKYbrary:
 - EUROCONTROL Guidance Notes for GA Pilots, No 11, "Getting the Most from your Transponder" - <http://www.skybrary.aero/bookshelf/books/714.pdf>
 - Transponder - <http://www.skybrary.aero/index.php/Transponder>
 - Safety Nets - http://www.skybrary.aero/index.php/Safety_Nets
- UK CAA - Safety Sense Leaflets - www.caa.co.uk/safetysense
- Netherlands AIC A01/10 - Importance of Selection of SSR Mode C Regarding Collision Avoidance. - http://www.eurocontrol.int/msa/public/standard_page/modes_aics_netherlands.html

DISCLAIMER

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