GASIL

General Aviation Safety Information Leaflet

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Issue no 1 of 2011

Fuel drains

The AAIB's Bulletin 10 of 2010 includes a report of an accident to a Cessna 177 Cardinal. It seems that when the pilot visually checked the fuel tanks before flight, he estimated they contained sufficient fuel for two hours of flight. He stated he had also checked the fuel strainer for contamination, and no abnormalities were found.

Some 10 minutes after take-off the engine stopped, with the fuel tanks both indicating empty. During the subsequent forced landing, the aircraft was damaged and the occupants suffered minor injuries. The fuel loss was attributed to the fuel strainer drain sticking partially open after the pre-flight check. This had possibly been caused by contamination by a waxy substance commonly found when water had been present in the fuel some time previously.

The loss of fuel through a stuck drain valve has been known to reduce engine power significantly during take-off. Although we stress the importance of carrying out checks of the fuel drains for water and other contaminants, it is vital to ensure that the valve re-seats correctly after the check and no drips remain.

File photo

Windfarm anemometer masts

Pilots have recently expressed concern that anemometer masts have been erected in areas proposed for use as future windfarms. Others have been erected adjacent to but outside the current windfarm boundaries. As can be seen from the photograph, these masts are relatively thin, and difficult to pick out from the air. Being less than 300 feet high, they are not required to be lit, or marked on CAA charts (and the sheer numbers of them would cause considerable clutter anyway), nor to be subject to NOTAM action unless they are considered by the aerodrome operator to affect safe operations around licensed aerodromes.

There is no VFR minimum flying height mandated in UK airspace, so pilots may find themselves, quite legally, confronted by one of these anemometer masts while believing they are separated by 500 feet from persons, vessels, vehicles and structures. Some power companies are to be congratulated for attempting to increase the visibility of these masts, but the hazards they pose to aircraft, including helicopters which fly at low heights in poor visibility, are obvious. Except perhaps in areas with which you are particularly familiar and have checked very recently, we can only recommend avoiding flight below 500 feet above ground in poor visibility!

Mandatory Permit Directives

The following Mandatory Permit Directives (MPD) have recently been issued by the CAA. Compliance is mandatory for applicable aircraft operating on a UK CAA Permit to Fly. MPDs can be found at www.caa.co.uk/mpds and will remain on the website available for download until they are published in CAP 661, Mandatory Permit Directives, which is published twice a year in January and July and can be found at www.caa.co.uk/cap661.

Owners of aircraft with Permits to Fly and their Continued Airworthiness Managers should register to receive automatic e-mail notification when a new MPD is added to the website, through www.caa.co.uk > Publications > Subscriptions > New User Subscription Registration, and choose the 'Safety Critical Information' category.

2010-009	MXP 740 Savannah Classic & VG	Wing lift strut attachment
Emergency 2010-010	Jabiru aircraft	Primary flight control surfaces

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Automatics don't think

Some recent incidents, including one involving a helicopter, remind us that technology is a tool to assist human brains, not a substitute for them. Even if the technology is working properly, it has to be carefully monitored to ensure it is providing the help we want. A navigation or autopilot computer may have many modes, and it is important to be aware which mode is selected, and exactly what that selection means. This applies at all times, but is especially true when we have no external visual references.

If for example a pilot decides to change his direction by selecting a desired rate of turn, or vary his altitude using a combination of a power change and the autopilot's 'airspeed hold' function, the autopilot computer does not know when the pilot wishes to stop the turn, climb or descent unless a further input is made. Similarly, if the pilot makes

a selection on a Flight Management System (FMS) computer, his instruments will direct him to whatever heading, track or level the computer believes (has been told) is required.

We frequently remind ourselves, and others, of the need to concentrate on the priorities of Aviate, Navigate, Communicate. We also need to remember that humans are by nature limited in concentration and easily distracted, and any distraction from the priorities can lead to unwanted consequences. An unselected or incorrectly selected heading or climbing level may result in an airspace infringement. An error when descending can be even more serious!

I thought I'd just go for a spin . . .

Why does an aircraft spin? "Because it is yawing while it is stalled, of course", said the young pundit. Every year, a sadly far too large number of pilots kill themselves and sometimes their passengers because they stall at a low height while they are attempting to turn. This frequently follows a loss of power just after take-off. Recovering from a stall in a gliding turn is no different from any other stall recovery. Moving the control column centrally forward while resisting the temptation to roll wings level until all the symptoms have disappeared should quickly bring the aeroplane back under full control if applied within a short time frame after the stall occurs. However, trying to roll stalled wings level, or a delay in the recognition or the recovery caused by distraction or fear, may allow the aircraft to enter the incipient stage of a spin.

It is of course also possible to recover from the initial stage of the spin which you have entered, provided you recognise the problem instantly and have sufficient height to carry out the recovery. All you need do is centralise the controls until the aircraft's natural stability takes over and you achieve enough flying speed to regain full control. Indeed, reading the BGA's accident and incident reports that's exactly what a Nimbus 3 pilot managed to do last year, although the recovery height meant there was not a lot of choice in landing areas left, and the glider was damaged in the field landing.

However, many pilots do not manage to recover in the time and height available. In the event of any amount of power failure after take-off, the first action for a pilot must be to achieve and maintain the correct approach speed for the conditions. Only after that (while maintaining the approach speed), can we make any further manoeuvres if we consider these necessary. Hitting an object while still under full control is much less likely to cause death or severe injury than stalling or spinning onto the surface.

Darkness, weather, what do you think?

Many aircraft are not equipped for, nor permitted to make, night flights. This autumn, the crew of a self-launching motor glider was preparing for an afternoon visit to an aerodrome to the West of their base. The forecast for the route was fair. Although showers were expected, the cloudbase would be above their calculated minimum safe VFR altitude. The wind, however, was strong from the Northwest, and the aircraft's cruising speed was relatively low.

Strapping in to the aircraft, the pilot's map disappeared down the side of his seat. What was expected to be a simple recovery process turned out to involve considerable time and "Abyssinian language" before the map (and some other items apparently previously mislaid by others) was retrieved and ready for use. Because of the delay, the crew decided to overfly their intended destination rather than land.

Once airborne, although the only showers appeared to be well to the North, it became obvious that either the wind was considerably stronger than forecast or there had been a mistake in the pre-flight calculations, because the first navigation feature was overflown much later than expected. Fuel would be adequate, but the return to base would take place rather close to sunset.

Farnborough LARS was providing a Basic Service, and information gleaned by listening to other aircraft's radio calls indicated that the showers were heavier than expected, with cloudbase much lower than forecast. However, the bad weather was clearly visible, well to the North, and apparently far from the return leg.

Having overflown the intended destination, the crew were able to navigate easily back towards base. As always, however, the time losses on the into-wind leg were not compensated by the gains flying downwind. Upper cloud started to drift over the area of the home strip, and the crew considered a possible diversion to an aerodrome they were passing, but decided the cloud was no threat to their continued flight and safe arrival.

File photo

Indeed, the home strip was soon identifiable ahead. The sun was setting, which would avoid any glare during the landing, which would still take place in 'daylight'. However, as the field slowly got closer, the sky rather more quickly got darker. As often happens with large cumulus or cumulonimbus clouds, a new cell had developed rapidly ahead of its previous position. Worse, as the aircraft descended into the traffic pattern, it entered an area of light to moderate rain, which reduced forward visibility. Fortunately, the final approach to the runway was clear of wires, and the trees were clearly identifiable. Judging the flare by looking ahead was impossible, but the view to the side was adequate. The aircraft touched down rather far into the down-sloping strip but managed to stop safely on the not yet very wet grass. (The windsock, had they been able to check it properly in the gloom, showed that the surface wind was affected by the shower and was now a tailwind.) Having taxied to the hangar, the aircraft was pushed inside just as the heavens opened.

The rather crestfallen pilot-in-command generously offers this tale as food for thought. He previously considered himself a safe pilot, who would never be guilty of press-on-itis, but confesses he allowed himself to be caught out, fortunately with no ill effects beyond a soaking when closing the hangar doors. When allocating cause, accident investigators ask themselves "at what point did the accident become inevitable?". Readers will probably have noted several occasions when decisions could have been made better. However, had this ended as an accident, what do you think that point would have been? The pilot's assessment is on page 7.

Engine failure

An accident to a microlight aeroplane described in the AAIB's Bulletin 10 of 2010 was reported as occurring following the failure of an exhaust valve in the engine due to thermally-generated fatigue cracking in the valve stem. The investigation concluded that the failure of the valve had been caused by operation of the engine beyond the manufacturer's recommended engine life of 300 hours or five years.

The report reminds pilots of single-engined aircraft, as we do frequently, that an engine failure can occur at any time. Ideally our aircraft should be flown at a height which allows us to reach a suitable forced landing area at all times, but such ideals are seldom possible or practicable. It would therefore seem to be good risk management to maintain the engine as the manufacturer recommends, even if everything seems to be working normally.

Emergency ADs

EASA produces bi-weekly summaries of the ADs they have issued or approved, which are available through their website www.easa.eu. Foreign-issued (non-EU) Airworthiness Directives are also available through the same site, as are details of all recent EASA approved Airworthiness Directives. CAA ADs for UK manufactured aircraft which have not yet been incorporated in CAP 747 can be found on the CAA website www.caa.co.uk/ADS.

We are aware that the following Emergency Airworthiness Directives have been issued recently by EASA and the FAA; however, this list is not exhaustive and must not be relied on.

Number	Applicability	Description
TC CF-2007-21R1	Bell Canada 206,222,230,407,427,430	Tail rotor blade weight screws
EASA 2010-0247-E	Eurocopter EC135,635, MBB BK117C2	Instrument lighting for NVG use
FAA 2011-01-52	Schweizer 269 series	Tailboom aft cluster fitting strut
EASA 2010-0268-E	Eurocopter MBB BK177C2	Starter/generator procedure
EASA 2010-0270-E	Eurocopter MBB BK177C2	Three-axis autopilot
EASA 2010-0272-E	Agusta AB 204, 205, 206, 212, 412	Tail rotor blade weights
EASA 2010-0274-E	L23 Super-Blanik sailplanes	Rear horizontal stabilizer bracket

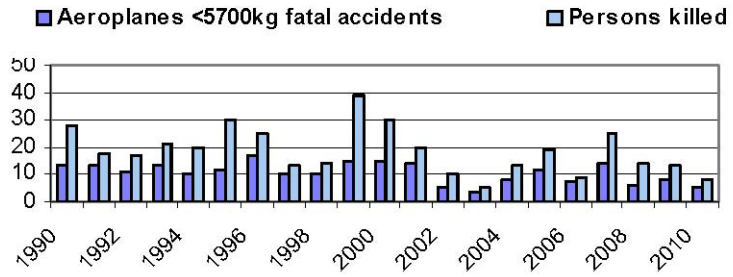
GA Fatal Accidents 2010

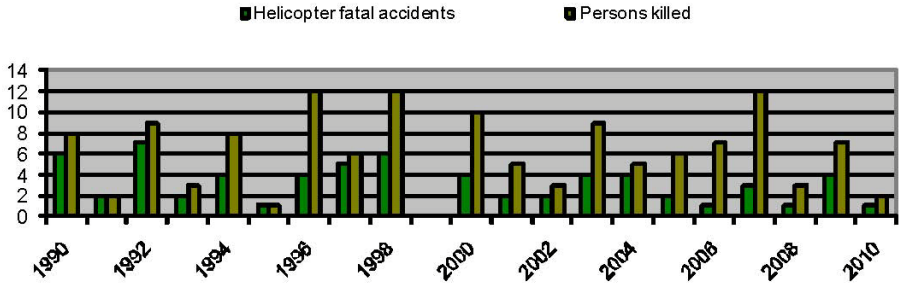
During 2010, there were six fatal accidents to UK registered GA aeroplanes, resulting in nine deaths, including one in a microlight. A further two people died in a foreign registered aeroplane. One fatal accident was reported to a UK registered helicopter in France, killing both occupants, and a further three died in a foreign registered helicopter. One other pilot died in a fatal glider accident. In the vast majority of cases, the circumstances reported are only provisional, because the investigations have not yet been completed, but completed investigations will be reported in bulletins on the AAIB (or BEA in the case of France) website and significant points will also be highlighted in future GASILs.

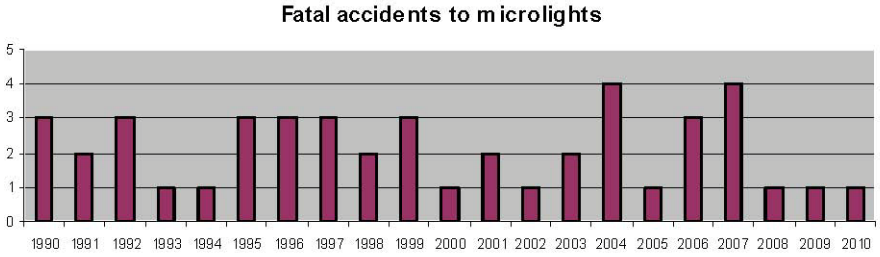
One of the reports should encourage pilots to consider what they would do if they experience fumes in their cockpit. Although we are encouraged by the lack of reported fatal accidents to aeroplanes in mountainous areas last year, hills are mentioned in both the initial helicopter fatal accident reports. We do not wish to draw any specific conclusions before the results of the investigations are completed, but flights in and around high ground are frequently affected by weather conditions seldom found over flatter areas. There are also likely to be fewer areas suitable for a precautionary landing. Careful planning and perhaps a course of training from those experienced in mountain operations should help prepare pilots for safe flight in such areas.

The graphs following show the annual numbers of fatal accidents and fatalities to UK registered aeroplanes and helicopters over recent years, and the number of fatal accidents to microlights. They do not include accidents to foreign registered aircraft. Each graph shows an encouraging apparent reduction, but we emphasise that the numbers cannot be considered to have any statistical significance.

15 Jan	**PA-31**	Lost control in cloud at low level (N reg) - probable incapacitation - 2 fatalities
18 Jan	**P&M Quik R**	Probably lost control at altitude over the sea in poor weather - 1 POB fatal
17 Apr	**MCR-01 Banbi**	Under investigation - crashed during forced landing after fumes reported - 2 POB fatal
9 May	**Mooney M20B**	Under investigation - crashed into a field and caught fire - 1 POB fatal
19 Jun	**Extra 300**	Under investigation - crashed during aerobatics - 1 POB fatal
10 Jul	**Stampe SV4C**	Under investigation - 2 POB fatal
8 Aug	**SZD Foka 4**	Under investigation - wings folded and separated during winch launch - 1 POB fatal
4 Sep	**Mooney M20J**	Under investigation - mid-air collision during air race - 2 POB fatal
23 Oct	**Agusta 109**	Under investigation - crashed in hilly countryside - 3 POB fatal (N reg)
9 Dec	**Robinson R22**	Under investigation - crashed in mountainous area in France – 2 POB fatal







Darkness – the pilot's assessment

Had the flight been cut short early, the crew would have had a variety of safe options available. However, once the aerodrome on the route home had been passed, any diversion to it would have been back into the strong wind, and darkness would have been complete. Other strips, downwind of the weather, were progressively more difficult to identify in the gloom. Failing to divert early had left him with no options other than to carry on in hope – not a good idea!

Don’t be accused of being Scilly!

The far Southwest of England is a popular destination for GA pilots. However, the local Air Traffic Controllers have become concerned that many of the visitors are unaware of the meaning of some of the airspace markings on the CAA charts. The peninsula land area and much of the sea around it is contained within the Culdrose Area of Intense Aerial Activity (AIAA), and the Lands End Transit Corridor extends up to 4,000 feet amsl.

As described in the UK AIP at ENR 5-2-9, within the Culdrose AIAA, a Lower Airspace Radar Service is available from Culdrose, and pilots are strongly advised to obtain at least a Basic Service when flying in the area. Both Lands End and Scilly Isles/St Mary’s have Aerodrome Traffic Zones and require prior permission to land. The specific procedures being followed within the Lands End Corridor are described in the AD section of the AIP within the information published for the aerodromes at both Lands End and Scillies. The procedures being followed by traffic using the corridor are described, and for safety reasons we strongly recommend that pilots not only heed the enclosed advice below, but follow any routings suggested by Air Traffic Control wherever possible.

The corridor lies within an area where considerable military helicopter and fixed-wing activity takes place. Pilots of aircraft intending to transit the Lands End Transit Corridor are strongly recommended to contact either Lands End ATC on frequency 120.250 MHz or St Mary’s ATC on frequency 124.875 MHz 10 NM before the corridor boundary. Pilots of aircraft transiting the Culdrose AIAA should contact Culdrose ATC on frequency 134.050 MHz.

CAA Safety Evenings 2011

The organisation of this winter’s GA Safety Evenings has been taken over by GASCo, the GA Safety Council, to which the CAA is a major contributor. The evenings are of value to everyone involved in general aviation, whatever they fly, operate or maintain, and logbooks will be signed when requested as proof of attendance.

The venues and contact details for the remainder of the season’s programme are listed below. For updated information see the CAA website www.caa.co.uk/safetyevenings. Organisations wishing to host a safety evening in future should contact GASCo on 01380 830584 or by e-mail to ce@gasco.org.uk.

Date	Area	Venue	Start	Contact
17/02/11	Plymouth	Plymouth Flying Club	19:00	01752 773335
18/02/11	Dunkeswell	Devon & Somerset Flight Training	18:00 for 18:30	0140 4891643
22/02/11	Wellesborne	Touchdown Inn Cafe	19:30	01789 842007
23/02/11	Coventry	Coventry Aero Club	19:30	02476 301428
02/03/11	Shoreham	Airport Terminal 1 restaurant	19:00 for 19:30	07790 669163
18/03/11	Sandy	Bedford Microlights	19:00	07789 220229
22/03/11	Portmoak	Scottish Gliding Centre	19:30	01383729323
24/03/11	Inverness	Highland Aero Club	19:30	01463 713086
26/03/11	Prestwick	NATS Prestwick Centre (3 weeks' notice required)	10:00	01292 692730