GASIL

General Aviation Safety Information Leaflet

www.caa.co.uk/gasil

Issue no 3 of 2010

Brakes?

A report in the AAIB's Bulletin 2 of 2010 concerns a Cessna 172. It seems the pilot started the engine with the parking brake off, but with his feet on the pedals. The report states that the pilot had completed the after-start checks before noticing that the aircraft was moving forward. By this time it was too late to prevent the aeroplane colliding with a helicopter.

The report notes differences between the brake system between the 172 and the Piper aircraft the pilot had flown most frequently. However, the accident should remind us that looking around outside the aircraft should not be confined to avoiding airborne collisions. Even if we have applied footbrakes correctly, muscles have a tendency to relax after a while. Every sequence of checks, whether in flight or on the ground, must be broken up with frequent scans of the outside world. Even if we ourselves are not moving, it would be good to know (while we had time to do something about it) if another aircraft was about to hit ours!

Brakes?....01
Brakes again!....02
Collision avoidance....02
Hot MOGAS....02
Funnelling....03
Overflow....03
Gross Error Checks....03
Landings....04
Don't assume, check....04
Decisions, decisions....05
Was that a heading or a flight level?....06
Check in....06
SLMG and Microlight Rating....06
Faxed flight plans....07
Emergency ADs....07
Engine failure....08
Isnt Hindsight Wounderful?....08

Brakes again!

Again in the AAIB's Bulletin 2 of 2010 we read a report of a pilot whose aircraft moved forward after engine start. In this case, it seems that, because of his seating position, the student pilot could not reach the brake pedal to apply the brakes before the aeroplane collided with a parked aircraft. The parking brake had not been applied.

Collision avoidance

A report in the AAIB's bulletin 1 of 2010 concerns a fatal accident to an Escapade microlight. It seems the pilot, having entered the circuit pattern at his destination, attempted to avoid another aircraft which he considered was a potential collision hazard. Unfortunately, during that manoeuvring, he apparently lost control of his aircraft, which did not recover from the ensuing spin before hitting the ground.

We have reminded pilots many times that most mid-air collisions happen in the vicinity of an aerodrome, and a recent study indicates that 60% of US GA collisions occurred in the traffic pattern. While we would hope it would never be necessary, it seems logical that we should be prepared to take avoiding action when flying our circuit. For that reason, we ought to maintain sufficient airspeed to allow us to make a safe steep turn until we need to reduce speed on the final approach. If visibility is reduced and we need to slow down earlier, a take-off flap setting, if available, should allow an increased margin above the stall at a lower speed without reducing forward visibility.

Hot MOGAS

A report in the AAIB's bulletin 12 of 2009 concerns a microlight which experienced engine problems just after take-off. The pilot landed the aircraft back on the remaining run way, but over-ran the end and the aircraft was damaged when it collided with a dyke.

The pilot concerned believes the cause of the engine failure was probably vapour lock. It seems the aircraft, whose fuel tank contained MOGAS and was painted black, had been parked in sunlight before the flight in question. MOGAS is more susceptible to vapour lock than AVGAS, and as owners will know, its use is restricted to fuel temperatures below 20 degrees Celsius. The contents of a dark painted tank in sunlight will considerably exceed the reported outside air temperature, which is measured in shade.

Editorial office:	Flight Operations Inspectorate (General Aviation), attn GASIL Editor, Safety Regulation Group, Civil Aviation Authority, Aviation House, Gatwick Airport South, West Sussex, RH6 0YR. Telephone (01293) 573225 Fax (01293) 573973 e-mail: david.cockburn@caa.co.uk.
Distribution:	FOI(GA) Admin, address and fax as above. Telephone (01293) 573525.
Content:	CAA staff comment and deductions are based on available information. The authenticity of the contents, or the absence of errors and omissions cannot be guaranteed. Nothing in GASIL relieves any pilot, operator or engineer of his/her duty to ascertain and comply with ALL applicable regulations and formal documents.

‘Funnelling’

In the article entitled ‘Gliders are difficult to see’ in the last issue we highlighted some times and places where gliders were likely to be found. Many of these areas also apply to any form of non-commercial aviation.

There are many areas of the UK over which the majority of pilots would prefer not to fly. These may be unlandable terrain such as forests, built up areas, high ground, and of course controlled or restricted airspace. The gaps between such ‘unpopular’ areas are likely to see a considerable amount of air traffic from all forms of aviation, and the collision risk is increased accordingly.

However, we ought to remember that the gaps may be further narrowed by other aviation activity. Glider sites and ATZs are probably obvious, but many aerodromes without an ATZ, including those marked as microlight or helicopter sites, have a lot of activity. To minimise the risk of collisions, Rule 12 of the Rules of the Air Regulations 2007 requires all aircraft flying in the vicinity of an aerodrome to conform to the pattern of traffic formed by other aircraft intending to land there, and make all turns to the left unless ground signals indicate otherwise. However, many pilots prefer to avoid the area of activity, further increasing the concentration of aircraft in the gap.

Other areas of high concentration are likely to be around prominent navigation features, and where these appear in already narrow gaps, the collision risk increases accordingly. In all these areas, and the approaches to them, we need to re-invigorate our lookout scan, so it is important to identify them during our pre-flight planning.

Overflow

A recent incident in a Bolkow 105 highlights a possible problem with ‘refuelling to the top’. It seems that several retainers holding the flexible fuel tank to the tank wall had failed, and the tank was now only capable of holding a small proportion of the fuel it was intended to.

Although not relevant to this particular incident, we frequently remind pilots that light aircraft fuel gauges are notoriously unreliable. However, as this incident indicates, even filling a tank to the top may not provide as much fuel as the pilot intended. Keep an eye on quantities used, and if things seem unusual, check!

Gross Error Checks

A recent incident reminds us that converting weights and distances from metric to imperial or US can cause serious errors in the calculations. As with navigation, make a rough mental calculation of what the final answer should be before using a calculator. Then, even if your fingers slip while putting information into a calculator or computer, any major error should be obvious and encourage you to try again.

Landings

A flying instructor has recently expressed his concern that some pilots trained at another flying club who have started flying at his own have experienced problems landing

invest in some dual training

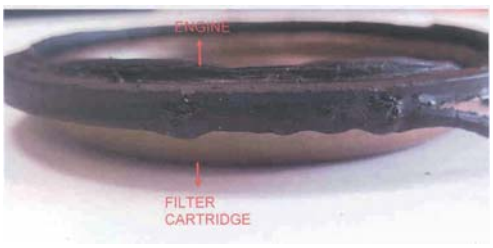
the new type. Since the pilots concerned had passed their skill test for their PPL, he suspected that perhaps the aeroplane type on which they had previously trained must have been particularly forgiving of incorrect technique. If that was the case, he felt he may have stumbled across one reason why so many landing accidents are reported in AAIB bulletins. Indeed, the AAIB's Bulletin 2 of 2010 includes a number of reports concerning landing accidents, in a variety of aircraft types.

Sadly, we doubt whether the assumption about 'unforgiving' aeroplanes is particularly valid. More probably, the pilots concerned had never really become adequately familiar with the technique of landing the aircraft. It is possible they had been unable to practise enough during their training and afterwards, because as we are aware, at many aerodromes it is difficult to achieve many landings in a flight logged as an hour, even when every approach results in a touchdown.

However, the frequent reports of accidents during the landing phase suggest that such lack of familiarity has expensive and possibly more serious results. We suggest that every pilot should seriously consider how confident they are about their ability to land an aeroplane in a variety of conditions. It is preferable by far to invest time and money in some dual training with an instructor who can improve your landings, than to be contemplating a much more expensive and time-consuming repair.

Don't assume, check

A report in the AAIB's Bulletin 2 of 2010 concerns a Rockwell Commander 114, fitted with a Lycoming IO-540-T4A5D engine. It seems the pilot experienced a rapid rise in propeller speed in flight, followed by a rattling sound from the engine, which then stopped. The aircraft was damaged and the occupants injured during the subsequent forced landing into one of the small and uneven fields available.



The investigation discovered that the gasket on the engine's oil filter converter plate had failed, allowing oil to flow out and causing the symptoms. It found that the maintenance organisation had mistakenly concluded that an FAA AD which called for the gasket to be replaced every 50 hours was no longer applicable.

Decisions, decisions . . .

Pilots who fly instrument approaches will be familiar with the expression “decision altitude”. That is the altitude on the approach at which the pilot has to make a decision to fly a go-around if he or she cannot see the necessary visual cues to continue the approach to land. Making that decision and acting on it is (or ought to be) fairly simple, and has to be made at a specific time. Similarly, multi-engine pilots calculate and refer to “decision speed” or “decision point” on take-off.

Unfortunately, while we might like to think otherwise, few other decisions in aviation are that simple and clear-cut. There is virtually no other decision which has a specific time at which it must be made. There will be of course ‘latest’ times, beyond which if we have not made the decision it will have no effect on the situation; for example there will be a latest time to apply power for a go-around, after which our aircraft will hit the far fence. In reality, decisions can, and should, be made well in advance of that ‘latest’ time.

If we delay until the last minute, we restrict our available options. For example, if we make the decision to go-around at 400 feet on the final approach, we should be able to manoeuvre our aircraft around any others which might conflict with our flight path. If we wait until the aircraft is on the ground or just above it, the only safe course of action may well be to climb straight ahead at the speed for best angle of climb. This will require accurate flying, close to the stall and with no room for manoeuvre.

An early decision does not necessarily require an early action. In the case of the go-around decision, we may decide at 400 feet that it is safe to continue the approach for a bit longer, but prepare ourselves to apply full power and climb if the way ahead is still obstructed when we reach 200 feet. Nor is it necessarily a choice between only 2 actions. If we can see a possible confliction with an aircraft in front of us while on the downwind leg, perhaps we could ease out to extend our base leg (having checked we are not getting in the way of someone behind us) to provide greater space behind it, rather than land too close behind it or fly a go-around.

The same applies for almost every aviation decision. The earlier we consider our options, the more likely it is that there will be several possible safe ones available to us, and that selecting a safe one will not cause other problems. For this reason, we continue to stress the importance of pre-flight planning; not just calculating the correct heading to give us our intended track, but using the information from weather reports and forecasts, and NOTAMs, to consider what decisions we are likely to have to make, and what options are likely to be safe. What do we consider a safe height to fly above the ground on the route? Is the cloudbase likely to fall below that? (Remember, forecasts are best estimates, so allow for error!) If we divert round the high ground, which direction is safest? Shall we need to avoid a restricted area, or obtain clearance through controlled airspace or an aerodrome traffic zone? If so, what frequency should we set up before we get to the possible problem area, and what will be the appropriate radio call?

Proper Prior Planning Prevents Pathetically Poor Performance!

Was that a heading or a flight level?

Recently, a pilot received and read back what he believed was a clearance from a foreign ATC unit to turn onto a heading of 100 degrees. However, shortly afterwards the controller noticed the aircraft on an unexpected heading, and reminded the pilot his clearance had been to climb to Flight Level 100!

A clearance to change heading would be given as "wun zero zero degrees". In UK airspace, in order to avoid the confusion which seems to have arisen in this case, a clearance to FL100 is given as "Flight Level wun hundred". However, other countries may not make that distinction – beware!

Check in

Recently, a pilot advised a LARS unit that he was changing frequency to that of "*xxx* approach", the designated unit for the Controlled Airspace he was approaching. Shortly afterwards, the following call was heard: "*xxx* approach, this is *G-XXXX*, a PA28 from *somewhere* to *somewhere else*, to route via *a third place*, presently *x* miles East of *a marked point*, at *such and such* altitude on *a number of millibars*, expecting to be routed through your airspace via *one VRP* and then *another VRP* not above *a certain altitude* and *estimating your boundary at a certain time*." This call took quite a while to complete, and was heard by a large number of rather frustrated pilots who were trying to make their own calls to the radar unit, because the transmitting pilot had not selected the new frequency!

Failing to select the new frequency correctly is not uncommon, and quite understandable. However, standard procedures for making radio calls are contained in CAP 413, available for download from the CAA's website www.caa.co.uk/cap413, as is the multimedia supplement 3 specifically intended for GA pilots. Much information can also be found in SafetySense leaflet 22 "Radiotelephony", which like all such leaflets is available through www.caa.co.uk/safetysense.

In all of these publications pilots are reminded to make their initial call short and simple (for example "xxx approach, G-XXXX for Zone transit") after listening out on the new frequency for a suitable gap in transmissions. The short initial call not only allows the controller to allocate priorities in a busy environment, but gives the opportunity for any frequency mis-selection to be corrected with the minimum of time wasted!

Keeping SLMG and Microlight Aeroplane Ratings valid

Many pilots may not be aware of the existence of the Official Record Series which are available through the CAA web site. In particular, Official Record Series 4 at http://www.caa.co.uk/application.aspx?catid=33&pagetype=65&appid=11&mode=list&type=sercat&id=17 contains general exemptions and approvals issued under the Air Navigation Order and other formal notices.

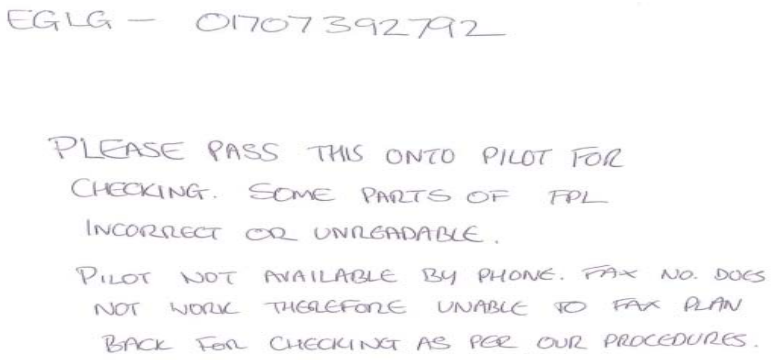
For example, no 786 of the Official Record Series 4 has recently been issued to permit:

1. the holder of a UK PPL(A) to keep a microlight class rating valid in the same way as an NPPL(A) holder;
2. the holder of a UK BCPL(A), CPL(A) or ATPL(A) to keep a microlight class rating valid in the same way as a microlight aeroplane class rating issued to a UK PPL(A) holder prior to 1 February 2008.
3. the holder of a UK PPL(A), BCPL(A), CPL(A) or ATPL(A) to keep an SLMG class rating valid in the same way as a microlight aeroplane class rating issued to a UK licence holder prior to 1 February 2008

Faxed flight plans

Although the AFPEx system is the primary method for filing flight plans, there are still pilots who are unable to use it and who fax their completed flight plan forms to the Flight Plan Parent Unit at Swanwick for onward transmission. However, the staff at Swanwick can only transmit what they can read and understand. If there is an error in the original, or if the writing is difficult to read, the information transmitted may not be that intended. Incorrect flight plans may cause delay or even refusal in clearances. However, the system is intended to give the person filing the opportunity to check that the information to be transmitted is what was intended.

Even if the Swanwick staff do not need to ask questions, they send a copy of the flight plan they are about to transmit back to the filer for checking. However, the filer must remain available for contact on the number they have provided until they have received that copy. Without a contact number, that copy will never arrive. Although some fax machines automatically print their own number on anything they transmit, many do not, so ensure you add the fax number yourself.


EGLG – 01707 392792

PLEASE PASS THIS ONTO PILOT FOR CHECKING. SOME PARTS OF FPL INCORRECT OR UNREADABLE.

PILOT NOT AVAILABLE BY PHONE. FAX NO. DOES NOT WORK THEREFORE UNABLE TO FAX PLAN BACK FOR CHECKING AS PER OUR PROCEDURES.

Emergency ADs

EASA produces bi-weekly summaries of the ADs they have issued or approved, which are available through their web site 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 web site www.caa.co.uk > Safety Regulation > Operations & Airworthiness > Airworthiness Directives

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

Number	Applicability	Description
EASA 2010-0037-E	L 23 Super Blanik Sailplanes	Elevator inner hinges
EASA 2010-0039-E	S-H Nimbus 4M & DM & Ventus 2cM	Engine starter ring gears
EASA 2010-0043-E	Eurocopter AS 332	Hydraulic pumps
EASA 2010-0052-E	Eurocopter EC155 & AS365	Liferaft mooring line attachment

Engine failure

We frequently highlight accidents involving loss of control following engine failures close to the ground, often just after take-off or during a go-around. We emphasise the importance of maintaining control and gaining sufficient airspeed before considering any further options. It is vital that the aircraft has sufficient energy to carry out whatever manoeuvre the pilot attempts thereafter. We also advise that pilots consider just before take-off what they would do in the event of an engine failure or other major emergency.

what they should do in the event of a partial loss of power

As with any handling exercise, practising the engine failure after take-off drill brings confidence and skill. However, we recommend that any such practice should be under the guidance of a flying instructor. One senior instructor has reminded us that pilots should also consider, and practise during refresher training, what they should do in the event of a partial loss of power.

Again, it is vital to maintain control and achieve an appropriate airspeed before considering further options. Any residual power should be used to gain or conserve as much energy as possible. The maximum gain will normally be achieved if the aircraft continues in a straight line, since turning reduces the aircraft's performance. If sufficient energy can be obtained, it may then be possible to carry out a turn into the circuit pattern without the danger of a complete power failure causing loss of control or preventing a safe landing. However, any circuit pattern must take account of the increased likelihood of total failure, for which we must be prepared, especially during turns.

Isn't Hindsight Wonderful?

We frequently draw readers' attention to AAIB reports, and encourage you to learn from them. It is often possible to make assumptions, either in these pages or in general discussion, about the actions of the pilot(s) involved. In many cases, we can look at the accident and conclude that the pilot should have made a sensible decision earlier. As we point out in the article on 'Decisions', it is important to consider possible options well in advance of the 'latest' time for that decision.

However, it is important to remember that we have the luxury of considering the pilot's actions from the comfort of terra firma. We are not trying to keep the airspeed within bounds while dodging cloud, re-assuring our passengers and trying to remember what transponder code ATC has just asked us to select. Yes, probably if the pilot had considered his options earlier and decided to do something else, the accident would never have happened. But the lesson we ought to try to learn is not so much what the pilot should have done to avoid the particular accident, but what knowledge he would have needed to choose the correct option. Would we have that knowledge ourselves? If not, how can we obtain that knowledge before we find ourselves in a similar situation?