GASIL

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Civil Aviation Authority

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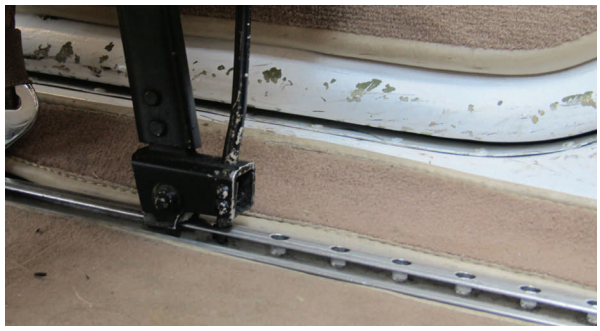
Seat movement

A recent occurrence report concerned a Cessna 152 whose pilot, among other problems, reported that his seat was loose in flight. Loose seats are a not unusual subject of incident reports and the consequences of a pilot's seat sliding back on take-off have been highlighted in previous GASIL articles.



There are several possible reasons for a pilot's seat to move. Incorrect locking should be avoided if the pilot confirms before take-off that his seat is properly locked. Some systems require (whether by design or sheer old age) the pilot to manually lift the locking bolt and refit it to secure the seat. However, light aircraft seat rails and their floor attachments are very susceptible to damage. If a crack has formed across a locking hole in the seat rail, flexing may allow the locking bolt to come out of its hole. Careful inspection during maintenance is an important defence against such cracks growing and causing loss of control.

Pushing one's feet hard against the rudder pedals may be considered a practical method of checking seat security. Unfortunately, damage to the rudder pedal mountings has resulted in the past from the application of excessive force in this way. Damage to the seat locking mechanism itself can also be caused by over-zealously checking the seat's security. We need to strike a balance between checking security and risking damage.

Hills and mountains

Having published the article with the above title in the last issue, our attention has been drawn to an accident report from the New Zealand CAA. It seems the pilot of a flexwing microlight had taken a passenger on a sightseeing trip one afternoon in a hilly area. Although the forecast included warnings of possible turbulence and downdraughts in the lee of high ground, he apparently considered that conditions during the flight would be similar to the relatively benign ones he had experienced when he had flown similar routes with other passengers earlier in the day.

However, the weather pattern was developing, and witnesses on the ground reported that the surface wind had increased after midday, with strong gusts. The accident report considers that the pilot failed to interpret the cues available to him associated with the changing weather conditions he was encountering. These cues included the aircraft's apparent groundspeed and drift, as well as whitecaps on the sea which were later visible in photographs taken by the passenger.

The report concludes that the aircraft most likely entered a localised region of severe turbulence, rotor winds, and downdraughts in the lee of the high ground over which it had been flying. While operating in these conditions an in-flight event led to a subsequent departure from controlled flight. The investigation could not determine whether the aircraft suffered a structural failure of the wing spar which resulted in the loss of control, or whether the pilot lost control in the conditions and the spar then failed. Both occupants were killed in the subsequent crash.

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 http://www.caa.co.uk/ads.

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 2012-0186-E	Eurocopter AS332, EC225	Hoist cable
EASA 2012-0194-E	Agusta A109	Tail rotor duplex bearing ring nut
EASA 2012-0207-E	Eurocopter AS350 B3	Tail rotor laminated half-bearings

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Check lists

While there are several modern designs to be found on our aerodromes, the majority of the aircraft are generally of one of a few well-known types. However, of these types (for example the PA-28) there are usually several different sub-types (for example PA28-161), and even within the sub-types different examples will be found with quite different equipment such as instrument fits.

The Flight Manual for the individual aircraft should contain, in the appropriate sections, information on all the equipment which not only the particular aircraft, but the generic sub-type, may carry. This means that in order for a pilot to familiarise himself with the equipment and handling characteristics of the individual aircraft he intends flying, he ought to sit in the aircraft with the Flight Manual, identify the equipment which that aircraft is carrying, and read the individual applicable sections. As more and more electronic instrumentation is approved for carriage by older aircraft types, the proliferation of possible fits has increased considerably. The manufacturers of many items of modern avionics will often make available a reference guide to the unit's functionality and operation, which can often be downloaded and used to supplement the information in the Flight Manual.

The Flight Manual contains the checks which the manufacturer considers essential for the pilot to carry out before, during and after flight. However, a Flight Manual is bulky and regular reference may damage the binding, so most pilots purchase and use a generic checklist for the type, as supplied by a commercial organisation. Being generic, these commercial checklists as supplied do not necessarily contain all the checks the manufacturer has published as essential. As part of the familiarisation training, we suggest that the pilot either amends his purchased checklist to include the additional checks, or makes up his own checklist specific to the individual aircraft containing all the manufacturer's checks. One advantage of making up one's own checklist (and ensuring it remains current) is that additional information desired by the pilot, such as recommended speeds and perhaps safe weight figures and performance data, can be included.

Many aircraft without formal Flight Manuals will be provided with a Pilots Operating Handbook containing similar, if not necessarily always as comprehensive, information. The same advice applies.

Flaps

Recently we were informed about a PA31 which experienced an uncommanded flap extension. It seems that with no selection from the pilot, the aircraft flaps extended to 40 degrees just after take-off and would not retract. Fortunately there was apparently no obstruction to hinder a safe climb, although the trim change must have been rather disconcerting at that stage in flight.

This report should remind us that emergencies just after take-off are not always the classic engine failure. While it is difficult to plan for such an unusual problem as a flap run-away, we need to remember that the first priority is to fly the aircraft, maintaining a safe speed and whatever climb performance we can manage until we reach a height at which we can consider further actions.

Pre-flight checks

An incident reported in the recent Occurrence Digest concerned a loose article found in a helicopter's engine bay during the pre-flight checks. Similar incidents are often unreported, because the hazard has been identified and rectification may be simple. However, while we may not consider it as such, a careful pre-flight check is a vital part of the safety management system which every pilot employs every day. Keep looking carefully – it works!

Uphill tailwind

SafetySense leaflet 12, 'Strip Sense', available like all such leaflets free for download from www.caa.co.uk/safetysense, recommends that pilots visit strips with which they are unfamiliar to examine the area and obtain a full briefing from the owner before attempting to land there.

There are several aerodromes built on sloping ground which require pilots to land uphill even with a moderate tailwind. Such a process may appear simple. However, apparent simplicity can catch anyone out. It is easy to imagine the air being deflected upwards by the slope, and preparing oneself for an approach requiring less power than normal to achieve the same approach angle. However, air deflected upwards orographically can frequently trigger convection, welcome to glider pilots but a hazard to an aircraft approaching to land.

A thermal triggered by the bottom of the slope to which we are approaching will reduce our rate of descent, initially probably encouraging us to reduce power. However, a strong thermal may well place us in a situation where, even with the throttle closed, we would be unable to stop, or perhaps even touch down, before the far hedge. A pilot who realises that fact late will be faced with a go-around which may be at a shallower angle than the ground ahead, especially as he flies out of the thermal's rising air. This effect may well be a major factor in landing accidents at sloping landing sites, especially as an engine requires more time to accelerate to full power from idle than from a normal powered approach.

Landing uphill may the preferred option, but if the wind is strong, or even moderate, it may be better to wait for a more suitable day, or until convection ceases.

Carbon monoxide

A helicopter was recently reported as having made a precautionary landing after the crew were alerted to a carbon monoxide warning. Any indication of carbon monoxide (CO) entering the cockpit should be treated extremely seriously; the colourless and odourless gas is with justification referred to as 'the silent killer'.

In 2001 the crew of a PA24 were killed when their aircraft spun into the ground 12 minutes after take-off. The accident investigation concluded that the occupants had been poisoned by CO leaking from a failed exhaust manifold into the cockpit. The aircraft was not carrying any detectors which could have warned of the presence of carbon monoxide.

CO can usually only be recognised in an aircraft by associated engine exhaust smells. Symptoms are subtle, similar to alcohol intoxication or perhaps the resulting hangover with its attendant headache. As previously described in SafetySense leaflet 24 'Pilot Health' (now withdrawn but hopefully shortly to be replaced), the best way to deal with CO poisoning is to prevent exposure in the first place, but if you do suspect its presence when in flight, increase ventilation, land and try to get an engineer to trace any sources.

We recommend that pilots carry one of the CO monitors on the market, which are usually primarily intended for home or caravan use, and include it in their normal scan pattern. Paper sensors are easily contaminated by other fumes, so consider changing them more frequently than their markings would suggest. Electronic detectors often have several functions in addition to a basic warning, and care should be taken that they are set up to give warnings and alarms in a timely and appropriate manner.

Check it!

A report in the AAIB's Bulletin 7 of 2012 concerns an Aeroprakt Foxbat, the wingtip of which apparently contacted a hangar while taxiing after landing. As has happened quite frequently in past similar events, although the damage was initially assessed as being minor, subsequent investigation apparently revealed that the rear spar was buckled near the wing root.

File photo

The damage discovered in this incident reinforces the importance of ensuring that the consequences of any collision, however apparently minor, should be thoroughly investigated by a qualified engineer before the aircraft flies again. The failure to do so has caused at least one GA fatal accident in the past.

Are you fit to fly?

The AAIB report highlighted above also includes the pilot's assessment of the cause of the accident. It seems that a recent bereavement had distracted him from carrying out a routine manoeuvre.

The potential consequences to an individual of events happening in their life are well documented in human factors textbooks. Our pre-flight preparation should always include an assessment of whether we are 'fit to fly', and that assessment should include our mental state as well as our physical fitness. Stress in any of its manifestations is a hazard; should we perhaps stay on the ground, or possibly ask someone else to act as aircraft commander?

Don't believe everything you hear!

The AAIB's Bulletin 9 of 2012 includes a report into an accident to a landing Agusta 109. It seems the passenger, who was a helicopter pilot, had assured the pilot in command that the path on which he asked him to land was sufficiently clear of a nearby line of trees, having apparently established that fact on a previous visit. However, while manoeuvring, the rotor blades clipped a small branch, causing impact damage to the rotor tips.

When we are planning to manoeuvre in a confined area, we should remember that trees and bushes have a habit of growing. What was adequately clear last year, or even earlier in the same year, may well not be at the time we wish to manoeuvre. We should also remember that human factors suggest everyone is likely to suffer from confirmation bias. If a person wants something to happen, he can easily convince himself to ignore evidence which suggests that the desired course of action is unsafe. In any case, there is no substitute for a (recent) personal reconnaissance before attempting confined area manoeuvres.

Mandatory Permit Directives

The following Mandatory Permit Directive (MPD) has 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. All MPDs currently published in CAP 661 remain in force, and the 'Alphabetical Index' previously found in the front of the hardcopy of CAP 661 is now on the MPD webpage.

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.

MPD 2012-003E	**P&M Aviation CT2K, CTSW**	**Engine fuel feed**

GPS use or misuse

Further to our recent article on GPS use, our attention was drawn to a report in the AAIB's Bulletin 9 of 2012. There are several factors considered in the report, which we recommend pilots to read in full. However, we consider the following extract from the AAIB comment of especial note.

"The pilot placed himself under mounting pressure as the flight progressed, culminating in a descent significantly below the safety altitude, without visual references, using the GPS as the prime means of navigation. It is likely that the pilot inadvertently selected EGKE as the destination, instead of EGKH, resulting in a track which took the aircraft over much higher terrain than the pilot realised. . . . . the decision to descend was the primary cause of the accident."

File photo

We continue to stress, as did the accident report, the advice in SafetySense leaflet 25, available like all such leaflets free for download from www.caa.co.uk/safetysense, that GPS must not be relied upon as a sole navigation reference in flight-critical applications. If used as a back-up, we recommend that pilots should load and activate their planned route before takeoff, but only after checking that the GPS inputs are correct against their pre-flight planning.

We also remind pilots who fly over or in cloud that descending below the calculated Safety Altitude in IFR is against the law because it is highly dangerous, not only to aircraft occupants but also to those on the ground.

Abnormal taxiing

Accidents have occurred to aeroplanes taxiing when one brake has failed, or a nosewheel steering system has jammed. Collisions have occurred when the pilot has misjudged his clearance from an obstruction such as another aircraft, so it is logical that we should allow as much space as possible between ourselves and collision hazards while taxiing. We should also be aware of any abnormalities, such as one brake pedal developing greater movement than the other.

However, other abnormalities may occur, and if we can detect these and take appropriate action early enough we may be able to prevent an accident. If for example we find that we need to apply steering or braking continually in one direction without an obvious reason such as a crosswind or sloping taxiway, we should suspect a binding brake or a problem with the steering system, either of which may cause serious problems on take-off. If we require a higher throttle setting than usual to maintain our normal taxi speed, it may be that both the brakes are binding, or it may be that we have forgotten to remove the parking brake. Taxiing the aircraft with brakes applied is likely to cause the brakes to overheat, damaging them and perhaps starting a fire, which reportedly happened to a Cessna 172 recently.

We should all know what actions we should take if the brakes do catch fire. However, if we know our aircraft and can detect problems before they become serious, we should hopefully never have to take them.

Door!

Recently, it seems the pilot of a PA28 took off with the door unlatched. According to the report, he then quite rightly ignored the distraction of the considerable noise, which almost certainly prevented clear radio communication, and returned to land and sort his problem out on the ground. A sound decision!

As we have noted often, attempting to close a door while close to the ground has been the cause of fatal accidents in the past. Whatever the reason for the original problem, fly the aircraft first!

Ground manoeuvring

Sadly, taxiing accidents in taildraggers continue to occur. The AAIB's Bulletin 8 of 2012 includes a report on an accident involving a stationary Cherokee and a taxiing Tiger Moth. In addition to the damage caused to both aircraft, one of the Cherokee's occupants was injured when the Tiger Moth's propeller contacted the Cherokee's cockpit area. Apparently, the Moth pilot considers he had not been weaving sufficiently to see the Cherokee ahead, which he observed was parked some distance for the normal parking area. He also thought that people walking near other parked aircraft may have distracted him.

When taxiing an aircraft, part of which obstructs the pilot's view, it is essential that the pilot frequently adjusts his direction sufficiently so that he can see all of what is in front of him. When travelling in one direction, the pilot must ensure he is aware, and clear, of every possible obstruction on that side of his route. He should then pick a point which is clearly visible on that side of the nose before turning the aircraft far enough to bring the same point into sight on the other side of the nose, check that side is clear, and repeat the exercise. Especially if the aircraft has limited stopping ability, taxiing between obstructions should only be attempted if the gap has been confirmed as being wide enough to allow the aircraft to manoeuvre without risk.

However, as we emphasise when considering problems in the air, or propeller swinging, you are not alone in the world! Taxiing problems can be reduced considerably, whether caused by cross- or tail-winds, or just space restrictions, if you obtain the assistance of another person or persons. A competent person walking at the wingtip, or ideally one on each wingtip, can not only prevent the aircraft turning towards obstructions, but can also provide clearance indications to the pilot so he can taxi straight. And if a competent wingwalker is not available, many taildraggers can be manoeuvred by hand.

Circuit joining

We have often reminded pilots of the need to identify the position of all other aircraft in the traffic pattern before joining it. We are grateful to a reader who has reported an experience he had recently while trying to do exactly that.

"I had obtained clearance to join the circuit via a crosswind join, 3 aircraft in the circuit. As I approached the aerodrome, one was visible on short final for a touch and go, another late downwind, and a third commencing the downwind leg. Unfortunately I let my passenger distract me with a question, so let my attention slip for a moment.

I received a further call from ATC to tell me there were 3 in the circuit when I reported "crosswind" overhead the runway, and I re-identified the circuit traffic. One on final, one downwind, and what about the guy who had been on final earlier? Oh yes, climbing away on a crosswind leg, but he would be well ahead of us. No problems, until I noticed the one climbing crosswind was continuing above circuit height! Was he really in the circuit or was he an additional aircraft? It became obvious that indeed he was, as another aircraft became visible at the start of the downwind leg, which meant I had to turn to go behind him and slow down to provide suitable spacing.

While my attention had been diverted I obviously missed that aircraft being given permission to take-off. ATC apparently didn't consider that an aircraft taking off to depart in the circuit direction constituted an aircraft 'in the circuit', so hadn't included his presence in their advice. Fortunately things turned out happily, but the combination of circumstances could easily have had a different ending. It emphasises the importance of positively listening as well as looking for all other aircraft in the area."

Can I fly IFR?

The introduction of the European Aircrew Regulation (PART-FCL) with effect from 17 September was mentioned in the Night VFR article in our last issue. In that article we pointed out that in order to fly IFR in any class of airspace, a pilot requires an Instrument Rating (which could be a Restricted Instrument Rating, IR[R], such as the UK IMC rating), and an aircraft certificated and equipped for IFR flight.

A PPL holder could, before the introduction of PART-FCL, fly quite legally under IFR above 3,000 feet, by obeying the Instrument Flight Rules of a safe height above obstacles and cruising at the appropriate quadrantal levels. He also had to maintain a flight visibility of 3,000 metres and remain in sight of the surface, but by following the IFR was permitted to fly closer to cloud than the 1,000 feet vertically or 1,500 metres horizontally required for VFR flight (which would also require a flight visibility of 5 km). Under PART-FCL, he is no longer permitted to fly close to cloud unless he possesses an Instrument Rating of some form.

However, only holders of PART-FCL licences (and JAR licences are now deemed to be such PART-FCL licences) are currently subject to the new rules. For the time being, those of us with UK (non-JAR, non-Part-FCL) licences are bound only by the UK Air Navigation Order, which currently still allows us to fly under IFR provided we stay within the limits of our licence privileges as defined in Schedule 7 of the Order. Holders of UK (non-JAR, non-Part-FCL) are reminded that these licences will cease to be valid for EASA aircraft in the future. Anyone flying any EASA aircraft under IFR from 8th April 2014 onwards must hold a Part-FCL licence (or a European validation of a suitable 3rd country licence) that includes the privilege to fly under IFR.

GA Safety Evenings 2012 - 13

GASCo, the GA Safety Council to which the CAA is a major contributor, is organising this winter's series of Safety Evenings. The evenings are of value to everyone involved in general aviation, whatever they fly, operate or maintain. Logbooks will be signed when requested as proof of attendance. The programme of currently confirmed events up to the end of the year is shown below, but more have been arranged in 2013, and others may be announced when confirmation has been received.

For updated information, and more specific contact details for the organisers, see the CAA website www.caa.co.uk/safetyevenings or the GASCo site at www.gasco.org.uk. Organisations wishing to host a future safety evening should contact the GASCo office on 01634 200203 or by e-mail to office@gasco.org.uk.

Date	Time	Area	Venue	Contact
25 Oct	1900	Sherburn in Elmet	Sherburn Aero Club, LS25 6JE	01977 682674
26 Oct	1930	Blackpool	Airport departure Lounge, photo ID essential	01253 472527
3 Nov	1900	Old Sarum	Flying School, SP4 6DZ	01722 322525
6 Nov	1930	Cardiff	Rhoose Flying Club, CF62 3EQ	01446 710000
7 Nov	1930	Milford Haven	Dawn till Dusk Golf Club, Rosemarket, SA73 1JY	01646 672294
8 Nov	1700	Caernarfon	Airport Terminal, LL54 5TP	01286 830800
9 Nov	1930	Welshpool	Airport Terminal, SY21 8RS	01938 555560
10 Nov	1900	Parham	Southdown Gliding Club, RH20 4HP	01903 815707
21 Nov	1930	Leicester	Leicester Aero Club, LE2 2FG	0116 2592360
23 Nov	1930	Blackbushe	The Bushe Cafe, GU17 9LB	01252 877727
4 Dec	1930	Bourn	Aerodrome building, CB23 2TQ	01954 719602
5 Dec	1930	Seething	Clubhouse, NR15 1EL	07976 661784
6 Dec	1930	Saltby	Buckminster Gliding Club, NG33 5HR	07790 914198