GENERAL AVIATION

CHIRP FEEDBACK

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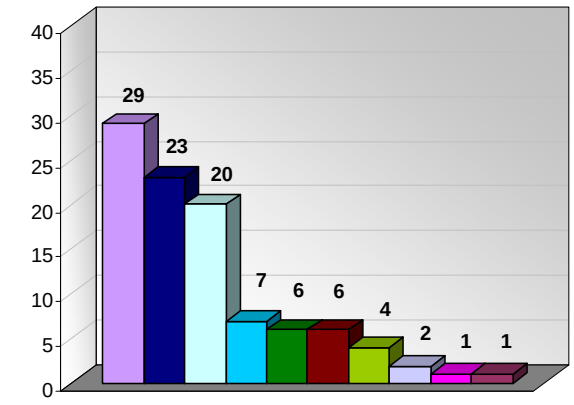
Most frequent GA Issues in CHIRP Reports 12 months to 31 July 2010

The chart shows the 10 issues most frequently reported:



Handling/Operation
Airmanship, Handling of A/C, Operation of Equipment

Communications - External
With ATC

Individual Error
Lack of Experience, Overload, Inadequate Knowledge/Skills

Near Miss
Airprox

Aircraft Technical
Propulsion, Design, Systems, Cockpit Equipment

Air Traffic Management
Level of Service, Separation

Maintenance
Servicing Error, Standards of Workmanship

Relationship Management
Planning/Organisation of Task

Regulation/Law
Compliance Of, Knowledge Of

Situational Awareness
In the Air

A significant number of General Aviation Accidents occur during landing. Some of these result from pilots simply either not being aware of the wind conditions or not taking account the possible effect of wind/turbulence on their particular aircraft type.

(1) LANDING WITH A TAILWIND/CROSSWIND

Report Text: I was PIC on a return flight from Gloucester to our base; I was flying in the company of another PPL holder with similar flight experience.

Prior to first contact with AAA Radar I listened to the ATIS which identified the Northwesterly runway in use with a variable cross wind of about 8 to 10 knots which favoured that runway. XXX Radar gave me clearance to enter the zone via the published rejoin. I flew the route as cleared.

Once on final I was cleared to land on the Northwesterly runway & the wind was given as 180 at 10 knots. I determined that that gave me a slight tailwind with a manageable cross component.

I do not recall any mention of landing with a tail wind during training (but that was a long time ago) but do recall a conversation with another pilot who had flown a go-around as a direct result of trying to land with a tailwind, he had commented on the very high ground speed.

I did notice the high ground speed as I crossed the threshold and approached the flare. The touchdown was fast but posed no major problem. It was during the roll-out that I started to have problems. The manageable crosswind started to cause the aircraft to turn to the left and the left wing to start to lift. It required considerable right rudder and left aileron input to maintain the runway heading and avoid a wingtip strike.

Subsequently I reviewed the forces acting on the aircraft during the roll-out and determined that as the aircraft started to be pushed to the left by the crosswind it was turned into an increasingly 'broadside on' position; thus increasing the cross component of the wind and making the problem worse. This is, of course, the opposite of the effect when an aircraft 'weathercocks' into a cross head wind.

Lessons Learned: Never land with a tailwind. Also, don't blindly follow ATC instructions that you are not happy to comply with. As soon as I was given the clearance to land on a runway with a cross/tail wind I should have carried out a go-around and asked ATC for the Southeasterly runway.

CHIRP Comment: **The reporter correctly analysed one of the problems associated with landing in a tailwind with a crosswind component; if you allow any swing to develop into the crosswind it will tend to increase the crosswind effect and, if not corrected, will exacerbate the swing.**

A second problem associated with these wind conditions is that the inertial forces are significantly greater, as they increase in proportion with the square of the groundspeed. However, the fin/rudder effectiveness, being a function of airspeed, does not increase. These characteristics are particularly important in tailwheel types.

Remember, the landing is not over until the aircraft is safely parked.

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(2) Wing Drop vs Propeller Torque

Report Text: The task was glider towing and the constraints on this particular day were that the tow rope had to be dropped prior to landing and the only available landing runway had a crosswind from the left of 15-20Kts. Also, strong thermal activity was causing surface wind variations with turbulence from adjacent trees affecting the final approach. Conditions were challenging but within normal operating limits. Of the 19 sorties flown by me that day only this one landing gave rise to serious difficulties.

Just as the aircraft was about to touch down on three points, a gust lifted the port wing against full aileron deflection. I applied full power and the aircraft suddenly and immediately levelled. I was able to climb away with no further roll control problem.

From my youth I was aware of accidents to RAF Balliol aircraft when a student bounced and applied full power causing the aircraft to roll as a reaction to propeller torque. The 235 hp Pawnee has a relatively high power weight ratio and while I have never previously experienced any effects of propeller reaction, in normal operation I apply or reduce the power slowly.

My conclusion is that the sudden and welcome correcting roll was a reaction to propeller torque, a second and unpleasant thought is that if the cross wind had been from the other side, the aircraft might have rolled inverted.

Lessons Learned: Pilots of powerful light aircraft should be aware of the potential effects of propeller torque. The aircraft can roll against the direction of rotation of the propeller with a rapid application of power.

CHIRP Comment: **The torque effects from a rapid application of power on large engines are well known to pilots with experience of single engine 'war-birds' and similar larger types. If you should experience a rapid wing drop, applying rudder in the same direction as the aileron input should assist in counteracting the uncommanded roll.**

In a situation such as that described, it is important that the appropriate corrective action has been thought out in advance so that it becomes an instinctive reaction.

Infringement or Icing? - An Interesting Dilemma

Report Text: We were returning from a quick lunch at a French airport in my Piper Arrow and it was my colleague's turn to fly back as Pilot-In-Command; he has a similar level of experience as myself (1,000 hrs plus, mainly on type), and had recently renewed his IMC rating (some 5 hrs training) having let it lapse about 15 years earlier.

My colleague tends to look for height when transiting over water (as I do); we started at FL45 at about the freezing level with only broken rather than solid cloud but as we pushed on we had to creep up to FL65 to remain VFR on top. The usual UK problems were to follow; you have to descend to keep out of Controlled Airspace. About 15 miles out from Lydd the cloud below us changed; there was a new solid wall of cloud in front of us preceded by a very large gap running 90 degrees away to our right where for a short moment I could see the sea. Due to the temperature I suggested that we descend through this gap to get VMC below which would still have been a very sensible safe but lower height over the remaining bit of water crossing. However, my colleague chose to proceed.

A few miles on, I checked the ATIS for Lydd and the pilot asked what I was doing. Lydd weather was good, so what was now below us had to be 10 miles or less in distance but we were at about -1/-2ºC and I had already expressed a concern it could get colder going down before it got warmer. I have very little experience of icing conditions and have only ever built up ice once before in 25 years. At this stage I pointed out we should not descend through cloud but do a 180 and return to the good cloud break gap only a few miles earlier; we had to act soon as the FL 065 TMA base was only a few miles ahead. It is quite common and normal for us to work together as a team to ensure we don't infringe or get into unnecessary trouble but as we fly this particular route very frequently general navigation/radio work was not adding pressure to my colleague's workload capacity.

My colleague then stated he would have to start to descend which I did not agree with due to the OAT but he reduced power and started, my words were along the line, "This is B...y mad, go back up now" to which he refused as his main concern seemed to be the looming possible infringement. I was closely monitoring the situation, the OAT and his flying which for a recently renewed IMC was perfectly OK but at one point when I read out we were -4ºC at about FL40 I had to say keep descending as he was in fact flying level and ice was building but not at an alarming rate. At no stage did we lose the stall strips but there was a clear "lump" I could see at the root of the wing on the leading edge. We had no impact ice. I was ready for a misfiring engine having experienced this on a previous occasion when I did just lose the stall strips when regrettably the French got the forecast wrong over the Alps! On that occasion I was with a much more experienced IR PPL, who was actually doing the flying.

We then suddenly broke out of the cloud at about 3,000 ft and land was a few miles in front of us. A thin layer of ice was on the windscreen; this cleared quite quickly at +2ºC. I was certainly much more comfortable on coming out of the IMC, as I have always had a concern you can never guarantee that a cable control will not start to freeze and add to your problems but I have no idea how long that might take, or how long an aircraft will keep flying with accumulated ice; on a weight basis we had several hundred pounds spare as we were only 2-up and had about 90 minutes of fuel out of full tanks on departure.

Lessons Learned: I was concerned and uncomfortable with the situation and was very close to declaring a PAN but on balance felt, after the descent had been started and the refusal to climb, that would have added to my colleague's pressure and achieved nothing at that point other than venting my frustration of being put into a potentially dangerous situation, which I viewed was one of all risk and no reward, as other options clearly existed in my mind. Once we were out of any possible danger my comment was simply "bad judgement and bad call". Not surprisingly, although I am experienced, as a PPL holder, I have no prior experience of this kind of

situation and I have no CRM training either to attempt to deal with it after it developed, but I do want to learn from the experience and I sure I could have done more.

On the IMC renewal the pilot was rightly encouraged, having renewed the rating, to use it and remain current but maybe he was being a tad too keen on the wrong day for doing that? I am capable of flying IMC from the RHS and considered demanding control as the owner and slightly more experienced pilot but having not specifically agreed that on the ground in advance, I again felt it was too late to make that call. In 15 years of flying with this pilot there has never been any indication that extra authority would ever be needed.

I have since discussed the matter with my colleague; his greatest concern was, and probably still is, the risk of an infringement. I have let the matter drop as we have agreed when flying together in the future to adopt the principles of "DODAR", which I came across in my subsequent research. I will also question on the ground if he ever intends to fly VFR above the icing level in future.

CHIRP Comment: **This report raises several interesting points relating to captaincy and crew resource management (CRM) that are more frequently associated with commercial air transport operations but which can be equally relevant to General Aviation.**

A situation similar to that described can arise relatively easily when two pilots with similar experience levels are flying together. In commercial air transport, processes have been developed to mitigate this type of risk. Flights are operated strictly in accordance with standard operating procedures (SOPs), which precisely define the responsibilities of each pilot and cover most situations.

Professional pilots are also trained in CRM to assist pilots–in-command in their decision making in all situations. The basic CRM process is relatively straightforward:

1. **Obtain as much information/clarification as is available.**
2. **Listen to other views/review options.**
3. **State intention based on the evidence available.**
4. **Resolve any conflicting views. Agree course of action.**
5. **Review/critically analyse outcome after the event.**

It is important to agree who is in charge before you get into an aircraft; the nominated pilot-in-command is legally responsible for the safety of the aircraft. A more comprehensive pre-flight brief between the reporter and his colleague might have assisted in establishing their respective responsibilities and determining how an unforeseen situation would be handled. Also, applying the basic principles of CRM in flight should have permitted the pilot-in-command to consider the reporter's overriding fear of icing and to reach a common understanding as to the most appropriate course of action to take.

One final point, don't put yourself under time pressure to resolve an unanticipated problem. A call to ATC and/or electing to carry out an orbit prior to entering Controlled Airspace might have enabled the pilot-in-command to consider all available options and reach the right conclusion.

The DODAR acronym quoted by the reporter is a CRM tool similar to that described above (Diagnose; Options; Decide; Act; Review).

COMMUNICATIONS DIFFICULTIES

Report Text: I was engaged on a PPL student training sortie flying circuits at our base airfield (Air/Ground radio - no ATC). This was my student's second session in the circuit. There was one other club aircraft in the circuit and, as it transpired, an aerobatic aircraft working on his display authorisation. The weather was CAVOK but the into-sun visibility was such that other aircraft were hard to spot.

The radio/intercom combination in the aircraft I was flying is notoriously poor and difficult to adjust. Consequently, student/instructor discussion is invariably overwhelmed by external radio transmissions. As we turned downwind for our first circuit I could hear the aerobatic aircraft trying to communicate with the observer on the ground. In general, his radio transmissions were of a poor quality and this, combined with our system, made them almost unintelligible. However, I managed to ascertain that he would be using a cross runway as his display line whilst we operated on the designated runway. As we turned final he would alter his display such that we could continue our approaches. However, it was not clear to me as to how this deconfliction would take place and I was unable to obtain clarification.

The previous aircraft turned final and the display aircraft called clearing the area. Shortly afterwards, we turned final only to be faced with a discussion on the Air/Ground frequency between the aerobatic pilot and his observer regarding the previous display. Throughout this approach I was unable to communicate effectively with my student regarding landing technique. On the next circuit we were faced with exactly the same scenario and I chose to land, curtailing the sortie.

My observations are as follows: I was uneasy with an aerobatic routine taking place on a cross runway whilst I was flying in the circuit. I was unable to ascertain the method the display pilot would employ to provide separation between aircraft. Throughout my sortie I never managed to visually acquire the display aircraft.

An Air/Ground frequency is established for specific use; debriefing display routines, especially when the frequency is in use by other pilots, is unacceptable.

The comms system in the aircraft I was flying is notorious and instructors have consistently tolerated it. I will seriously consider the nature of any future flight in this particular aircraft before accepting such a 'defect'.

I had not received any brief before my sortie that the activity was to take place. Furthermore, our airfield does not promulgate itself as having aerobatics and any aircraft entering the ATZ (including no RT) should be able to assume that Rule 12 applies. I question the wisdom of conducting aerobatics within an uncontrolled ATZ without appropriate notification. I discussed the matter on landing with my CFI.

CHIRP Comment: **In a situation where any non-standard flying activities take place within an ATZ it is the responsibility of the airfield authority to establish**

local procedures to ensure that these activities can be safely co-ordinated with normal operations and to promulgate the procedures.

In this case, the aerobatic activities had been sanctioned by the airfield authority and the details had been notified to the local users; however, this information had not been promulgated effectively to individual instructors and other pilots.

The use of the allocated airfield VHF frequency for mentoring an aerobatic display was inappropriate.

As regards the reporter's communication difficulties, whilst it is sometimes difficult to achieve a satisfactory balance between intercom and VHF volume levels, the reported difficulty in communicating would suggest that this aircraft's radio/intercom was not suitable for a training exercise.

INADEQUATE FLIGHT PLANNING

Report Text: I normally fly in Scotland where there are large areas of open FIR with few aeronautical obstructions. Having attended a meeting in London on the previous day, I planned to fly to Staffordshire in my light twin before returning to my base. I arrived at Denham, having already picked up the current F215 from the internet and drew up my intended route via HEN, DTY and Tattenhill. I took off, followed the route exactly, remaining just below cloud at about 2,200ft, using the current 1:250,000 VFR chart.

I did not contact any ATSU but squawked mode C with a mode S transponder. It was only as I passed Nuneaton that I realised I'd flown straight through the approach path for Coventry runway 23. Subsequent checking of the map indicated that, at about 5nm from the field, I'd flown straight through the ILS glide path.

I was so convinced that this was a simple flight in the open FIR that I'd never even considered giving Coventry a call. I decided to report this incident because it is an example of thoroughly sloppy airmanship, with serious potential safety risks. It reinforces the need for attention to detail of all features along a planned route: ATZs, para dropping sites, gliding sites and so forth.

Lessons Learned: As someone currently doing a full-time Instrument Rating course, the significance of what I'd done was only too apparent. The cloud in the vicinity of Coventry had been broken at about 2,400 to 2,500 feet; I was just below the cloud. Hence, had I not been seen on radar and someone had been on the ILS, then he would have had virtually no time to see and avoid.

Safety is about discipline and attention to detail. When flying in busy and unfamiliar airspace, the pre-flight planning must be to a very high standard and basic airmanship should include courtesy calls to airfields, especially major ones.

COMMENT GAFB 43 - CARBURETTOR ICING

Report Text: There is a common idea that the engine should be warmed every 500 feet during descent on practice forced landings (PFLs). The problem with this is that different aircraft have different rates of descent. As a flight examiner, I get to fly in a wide selection of aircraft and I have noticed that some, such as C172s, seem to have a considerable amount of residual thrust when gliding, so the rates of descent can be very low. This means that it takes quite a while to descend 500 feet, by which time the engine is very cold and the Carb Heat has become negligible. I think it would be far more sensible to warm the engine at time intervals and, given the temperatures we experience, I find that 30 seconds is a reasonable figure.

If the engine does stop, all may not be lost. Many years ago, while conducting an instructor course in very cold weather, my student closed the throttle and started a glide approach. Within a short time, I told him to open the throttle, only to find that the engine was only wind-milling and we were not going to reach the runway. However, I found that, when I moved the throttle over the range, there was one spot where some power was developed and by playing around this, it gradually built up and we had sufficient power to reach the runway.

Most flight manuals recommend minimising the use of Carb Heat on the ground as the hot air is unfiltered. This seems to deter pilots from using Carb Heat during taxiing, even though ice often forms then, due to the low power setting.

My club operates a Robin HR200/100B from a grass airfield, so we frequently experience very high humidity over the damp grass. We see reductions in power after start-up and while taxiing and this needs Carb Heat to avoid engine stoppage.

As several accidents have been reported when the engines stopped shortly after takeoff, we have modified our procedure as follows: At the start of takeoff, we open up to 1,800 RPM against the brakes, apply Carb Heat for long enough to be sure that any ice formed since the power check has been cleared, then release the brakes and continue with the takeoff.

I hope that all this doesn't sound like telling Granny how to suck eggs, but the frequency of this avoidable cause of forced landings suggests that we have to keep working on the problem.

CHIRP Comment: The reporter makes several useful points about carburettor icing and the use of CARB HEAT/HOT AIR; this report should be read in conjunction with CAA GA Safety Sense Leaflet 14 - 'Piston Engine Icing'.

Three points are worth emphasising:

1. The purpose of periodically advancing the throttle during a prolonged descent is also to check that the engine does respond in addition to assisting warming.
2. Prior to selecting CARB HEAT/HOT AIR - ON, note the rpm. After selecting OFF, check rpm is the same as previously. A higher rpm indicates carburettor icing may be present.
3. The use of CARB HOT AIR during taxiing is a balance of risks in the use of unfiltered air. If your engine is susceptible to icing, use HOT AIR during taxiing and/or confirm that the carburettor venturi is clear of ice prior to take off by operating CARB HOT AIR for long enough to ensure no ice is present, as noted by the reporter. Electrical and other forms of CARB HEAT may be used during taxiing without restriction.