GA FEEDBACK

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We all know that we would recognise an instrument error, such as a misreading ASI or altimeter, or would we? The following reports contain some important lessons:

(1) INSIDIOUS STATIC

The story starts a few days before the flight in question when a previous pilot noticed that the starboard fuselage static vent of our light single engine piston aircraft was blocked by gunge. To rectify this he set about extracting the gunge with a straightened paper clip, possibly not appreciating that some of the gunge might have fallen back into the static system. Nevertheless he proceeded to enjoy an uneventful flight.

Two days later a colleague, who is an experienced CPL pilot and glider pilot arrived for a check ride and to collect the aircraft for positioning at a Southern airfield prior to departing to North Africa. Although he had been thoroughly checked out on the aircraft previously, his Club currency had expired. He had been held up by traffic and was half an hour late: I was conscious of having to hurry to be on time for a meeting that evening.

The check ride was predominantly designed to see if he could run through the checklist correctly and then perform a swift circuit. It was a hot, fine, and windless day and the aircraft had full tanks. On the approach, he left the application of full flap rather late and consequently we were really high half a mile from touchdown, which meant closing the throttle altogether. It occurred to me that we ought to throw the approach away but time pressures militated against this.

The indicated airspeed was some 90 knots at this juncture and as speed reduced I became aware of a very nose high attitude. At about 85 knots indicated, the stall warning horn sounded, which I thought was ridiculous as the aircraft's gear and flap stall speed is 53 knots. Shortly after this I became visually aware of a very rapid rate of descent with the ground approaching alarmingly swiftly.

In spite of the nose high attitude and the stall warning blaring, neither of us comprehended at once what was happening. In the event I finally shouted "POWER" - I do not remember whether it was my colleague or I who actually bashed the throttle open and checked the huge rate of descent. We then touched down gently in a nose high attitude with the stall warning still sounding.

At the time, I put this poor approach and landing down to lack of practice in a strange aircraft and as all other parts of the check had been completed immaculately, after discussing the stall warning and in view of his experience, I was content to tell my colleague that he had passed the check.

Two days later, my colleague telephoned from Spain to say that not only had the stall warning sounded on his last approach, but that he had found the starboard static vent to be gunged up at the previous en-route airfield. He had dealt with the obstruction in the same way as the earlier pilot and then the penny dropped on both of us with a pretty heavy clang. There must have been a collection of gunge in the static system, which was causing a partial blockage leading to an inaccurate airspeed indication.

You will recall that the movement of the airspeed needle is governed by a diaphragm registering the difference between pitot static plus kinetic pressure on one side against fuselage vent static pressure on the other side. If there is a partial blockage on the fuselage static line the static pressure in the diaphragm chamber will be lower than ambient in the descent and the airspeed indicator will over-read. The higher the rate of descent the greater will be the over-reading.

It then dawned on both of us that we had virtually stalled the aircraft on finals and could have ended as a blazing heap in the undershoot.

What really astounded me is that I failed to appreciate the excessively nose high attitude of the aircraft and my slowness of reaction to the sound of the stall warning horn. Even after we had landed I did not appreciate that anything was amiss so insidious was the effect of the static blockage.

What was causing the airspeed indicator to over-read? You will recall that the previous pilot had found gunge in the static vents and had poked at the blockage with a pin. In the subsequent investigation, the static lines were dismantled and we found that both lines had been invaded by thoroughly cunning insects. The static vents

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on each side of the fuselage are both connected via a Y joint to the static side of the airspeed indicator: the Y joint being in the rear fuselage. The insects, in seeking to make a home for their young, had travelled about 10 inches down each static line to build a little mud wall, retreated a couple of inches and laid the young. Each then retreated further and built another mud wall about two inches from the static vent and then, before pushing off, covered up the static vent itself. The insect debris removed from the static lines would provide the equivalent of a filling for about a third of a rolled cigarette.

Moral No 1. There must be a reason for gunge in a static vent and poking at it is not the way to deal with it. It is but a two-minute task to reach the static lines and these should always be investigated should gunge appear in the static vent itself.
Moral No 2. The stall warning horn is there for a purpose. If you hear it, then apply power at once and climb to a safe height to investigate.

Moral. No 3. If there's a hole, sooner or later, something will climb into it.

Moral No 4. If you're rushing things you're inviting disaster.

After many years of flying I learnt about flying from that!

One final point; for a given configuration, setting the correct power and maintaining the correct attitude will give the correct performance.

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(2) STATIC PRESSURE

The aircraft, a pressurised twin piston, had completed an annual check 20 hours previously and I planned an IFR flight from England to Ireland.

All pre-flight and after take-off checks had been completed and the pressurisation controls were set for flight at 14,000ft. I transferred to Area Control and was cleared, if I recall correctly, direct destination and to flight planned level.

While hand flying and climbing through approximately 3,900ft (FL 39) I noticed a fairly rapid loss of airspeed despite maintaining attitude and correct power settings for the climb. After rapidly checking all other instruments, I declared a PAN call and informed them of the problem. I was given a heading back to a nearby regional airport and very shortly transferred to the Airport Approach frequency. After initial contact I was transferred to a discrete frequency and was able to discuss the problem, by which stage I had entered VMC between layers.

On setting up for my approach checks, flying attitude and then transferring control of the aircraft to the autopilot, I proceeded to reconfigure the pressurisation settings for the descent, whereupon the aircraft entered an uncommanded rapid climb. I rapidly disconnected the autopilot and levelled the aircraft. Once in level flight, I switched out the pressurisation system whereupon the altimeter showed a rapid descent although I believed that I was still in level flight and had not altered attitude nor power settings.

Eventually in level flight both by attitude and altimeter I received vectors for a visual approach having identified, with the assistance of an escort aircraft, which had been vectored towards me, an area of cloud break for a visual descent and approach.

At some stage during the descent, passing, if I recall, about 2,500ft the ASI came alive and I was able to complete my approach and landing uneventfully.

I can confirm that pitot heat was on during the flight. With assistance I checked that the pitot heater was functional and that there was no water in the system.

A subsequent flight was completely uneventful.

This was the first time in my flying career that I had need to declare a PAN and I was immensely grateful for the undivided attention of the controller.

The symptoms described in the report are typical of those that might be expected if the aircraft static pressure system is exposed to cabin pressure, as in the case of a static leak to the cabin.

The subsequent engineering investigation established that this had been the first pressurised flight after two engineering interventions - the annual check, during which some of the interior trim had been replaced and secondly, work on the instrument panel to carry out repairs to the autopilot and the weather radar, carried out about two weeks before the incident. Subsequently, a static leak was found behind the instrument panel.

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CHART CONTOURS

Having recently purchased new maps for a flight from the Midlands to Scotland and then onto Ireland, I was taken by surprise on two occasions by the way in which terrain is depicted. En route to my destination in Scotland I was a little surprised at the level of the hills relative to my 3,000ft altitude (2,000 was too low and 4,000 too high due to weather). When checking on the map all the hills were there, as were the spot and safety heights, but unlike my previous charts the high ground DOES NOT stand out. Again, continuing to Ireland, there are some areas of high ground up to 2,100ft very close to the airport and the terrain is masked even further by the airport control area shading. I showed the charts to two people (a non pilot, who understands maps, and a newly qualified pilot), both made the

comment that on the charts produced by #### "the hills disappeared!!"

This is to my mind alarming that three out of three people got the wrong impression of the terrain. There is no question that the information is on the maps but perceptions play a large role in interpreting information and in a country where we are generally forced to fly between 2-4,000ft because of weather and controlled airspace it is essential that high ground is emphasised.

I would assume that many UK pilots are trained using the series of topographical maps where dark brown on the contours starts at 3,000ft. On the maps I purchased it starts at 13,124ft. The situation is made worse by the fact that the elevations are in feet on the left hand side on the charts from one supplier but in metres on the other charts. At a casual glance, 3,000 ft and 3,000 metres have a similar colour!!

Just look at Biggin Hill on the #### chart, as an example, which appears to be on flat ground rather than on top of a hill. Furthermore, high ground would be even less visible on these charts at night.

I'm sorry to say I believe that these charts are a potential risk for UK trained pilots.

The charts are produced for VFR + GPS use and are clearly marked as such. The chart manufacturer's policy on contour marking and reduced topographical detail is consistent across this series. Alternative UK 1:500,000 topographical charts for VFR flight are available.

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SEE AND AVOID, BUT ONLY JUST!

(1)

As a part time instructor with many years in aviation I felt I maintained a good lookout, vital in the Southeast crowded airspace. Approaching Goodwood on a glorious summer day and distracted for a few seconds by something on the ground below I was horrified to look up and see, coming straight at us, another plane. We were only a few seconds from impact, all I can recall is a spinner above a low wing looking very much like those menacing paintings of the ME109 head on.

With no time to even warn my student (who was the handling pilot) I pushed the control column hard wondering if the other A/C would take the same evasive manoeuvre. He passed above us from right to left, wings level, and probably only 20ft away. Had I not glanced up when I did he would have flown straight into the side of us.

Yes, I have filed an AIRPROX, but I assume we were both VFR and the other aircraft had the right of way. My lookout was not good enough. I agree with a recent article in the Flight Safety Bulletin on the "Illusion Of See And Avoid". Our lookout can never be good enough, planes can come out of nowhere, one did and I only narrowly escaped to tell the tale.

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(2)

While instructing a new student on his first lesson in my flexwing microlight Blade 912S G-XX at 2400ft amsl, my aircraft and passenger were endangered by the proximity of a twin-engine aircraft which had approached my aircraft from between 6 and 7 o'clock position at the same level.

I normally keep a good lookout, but this position is very hard to cover and, as LUCK would have it, I was explaining to the student why the cloud above us produced such smooth conditions as opposed to the cumulus in our 7 o'clock position (now pointing out in that direction), when out of the corner of my eye I noticed something. As I turned my head, all I could see was two props and a cockpit coming at me at the same level, closing at less than 50 yards. Instinctively I pushed the bar out, and waited for the impact. The twin must have noticed us at the last second, as we saw it diving away underneath us on our right hand side heading towards a nearby airfield. The student asked, "Do they normally come that close"; my answer "NO". We must have passed within 100ft vertically and horizontally.

This area is the Low Level corridor between two major airports and as such is densely used by GA aircraft, so a good lookout is a must when in this area.

I have to believe that the twin must have been flying VFR, as the weather conditions were CAVOK. So why did it not see me as I had strobes on and working?

After conducting flight trials, the British Microlight Aircraft Association recommends that, if both aircraft are level, the optimum avoiding action is to pull the bar to descend, as this action will provide the fastest rate of change of direction.

It should also be noted that the level of light provided by some strobe lights is such as to limit their effectiveness, particularly in bright sunlight, and thus they may induce a false sense of security.

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SAFETY FIRST, OR SECOND?

On the day in question the weather was good with a light surface wind. An instructor was briefing a qualified PPL (H) pilot, who was converting onto a new type. Part of the conversion exercise was to be conducted in an adjacent Control Zone. The instructor passed his fuel requirement to Operations and the Operations manager went to fill the helicopter in question with 'AVGAS'. When the refuelling was complete, the instructor and

student went to the aircraft, started up and lifted for training. A loud bang/thud was heard on lifting; the cause of which was unknown at that time.

A short while later, a fuel cap was found on the landing pad from which the helicopter had lifted off and was brought to the office. It was the same colour as the helicopter that had just departed. One of the staff suggested that it was the helicopter's fuel cap and the aircraft should be recalled immediately. The Operations manager suggested that there was no problem and he would replace it when the helicopter returned. A discussion followed, during which the risk of fuel contamination; engine failure and fire in flight was discussed. The Operations manager said that he had never heard of any of this, but after consultation with another senior member of the organisation agreed to recall the helicopter.

Eventually, ATC contacted the aircraft; it returned promptly and landed on the grass. The Instructor got out, ran over to the Operations manager who was holding the fuel cap. The Instructor said, "That was your fault, you didn't put it on properly!" He snatched the fuel cap out from the manager's hand walked back to the aircraft, which was still running, replaced the cap and the helicopter flew off again into Controlled Airspace. The Operations manager declared that there was nothing to worry about as #### was happy to fly.

I made no comment and held back my concerns because had that been me, I would have shut down the aircraft!

Several individuals present, including students, were amazed at what they had witnessed and discussed the Safety issues that had been breached. It was a good lesson under the circumstances! When the instructor returned from the training flight, his first words were "What a stupid thing it was for the Operations manager not to put the cap on properly. It wasn't my fault!" One of the staff asked if he was going to take the helicopter out of service, as there might be some contamination and the tank should be inspected. He said, "What for? It wasn't raining. There's no point!" He seemed perplexed and in a state of 'Denial'; as far as he was concerned it was always going to be someone else's problem. When his student came into the reception area the instructor told him what a good flight he had done and to forget about the fuel cap business!

The instructor has a wealth of experience and is well respected. However, it appeared on this occasion that his pride interfered with safety and I believe he set a bad example to all the persons concerned, especially his student. He still believes there was no problem and he has since stated "Jet A1 is more dangerous than AVGAS"!

In this scenario, I think that the instructor should have 'Shut down' as soon as he returned to the aerodrome. The continuation of training and the return to Controlled Airspace in a relatively densely populated area potentially put a lot of lives at risk. I am only pleased to see that the whole event passed by without an accident!

The Air Navigation Order 2000 Article 43 states that it is the responsibility of the aircraft commander to ensure that an aircraft is fit to fly in all respects; this would include confirming that the fuel cap was secure prior to flight.

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LATE ARRIVAL

I filed a VFR flight plan prior to departing a major airport in Belgium for my base in East Anglia with 1300hrs my estimated time of departure. On reaching the apron, due to the strong wind (28kts) I asked permission for two wing walkers for taxi to runway; this was granted. Halfway to the holding point, I had to wait for an incoming jet to land. My take-off time was already 35 minutes late.

I decided to leave the French coast just after Dunkerque for Dover. After 15 minutes, I changed my heading a few more degrees north for Manston. At this time my speed over the sea was down to 23kts (GPS).

For some reason I could not raise Manston on R/T so went round the zone and headed North towards my destination. My Groundspeed was then 93kts but due to the combination of 35 minutes late departing and my very slow Groundspeed from Belgium to Manston I was over one hour overdue, which led to some concern at my destination

What I am asking - Was there no way of the departure airfield informing my destination of my time of take-off?

The departure airfield in this instance had an Air Traffic Services Unit (ATSU), so, if the destination airfield also had an ATSU, the departure time would have been passed automatically. However, as the destination airfield did not have an ATSU, the departure airfield would have informed the destination airfield's parent ATSU. In this case, the pilot should notify a responsible individual at the destination of his intended arrival time, so that in the event of his/her non-arrival, the responsible person can advise that parent ATSU. [CAA (SRG) Safety Sense Leaflet 20A refers.]

Also, if delayed further en route, as in this case, you can request any ATSU to pass a revised ETA by telephone to your destination.

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