GA FEEDBACK

No: 18 November 2003

Pre-flight Checks are an important part of the safety-chain no matter what the type/size of aircraft, as these two reports demonstrate:

A Costly Oversight

Half way through my pre-flight for an evening local flight I was disturbed and forced to push my aircraft backwards rather hurriedly. I broke off my pre-flight and helped with repacking the hangar. Returning to my plane I continued where I'd left off, climbed aboard and started up whereupon my propeller fouled the front spat. The Pulsar has a castoring nose-wheel which had turned through 180° when I pushed it back. I had no idea there was a possibility of it fouling the propeller.

Maybe this will stop somebody else from making the same mistake.

The Pulsar design is such that the nose-wheel, or spat if fitted, will foul the propeller in the above situation.

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Lost or Forgotten?

On returning to my home airfield I was unable to find the aircraft tow bar to put it back into the hangar. Neither my wife nor I could remember taking the tow bar back to the hangar before the flight.

On our next visit to the field a week later it had re-appeared and was with the aircraft. It was soon explained to us that it was seen dropping from the aircraft as it climbed from the field a week earlier!

YES! - WE HAD TAXIED AND TAKEN OFF WITH THE TOW BAR STILL CONNECTED TO THE NOSE WHEEL.

I can only admit that I was flabbergasted. Such a thing only happens to other idiots and not me! When the event finally sank into my puny brain I began to wonder why it had happened and how had it not been obvious or not caused an accident.

The preparation for the flight was somewhat different to normal in that I decided to add a litre of oil. The aircraft had already been moved from the hangar, then the oil had to be collected, a funnel to be found and in the process the tow bar was forgotten.

We taxied away along a short tarmac taxiway onto the grass with the 'T' end of the tow bar rubbing along the ground. How it never dug in still amazes me. Come to think of it, I did notice an unusual noise but with such good headphones most external sounds are virtually lost. The takeoff must have been spectacularly dangerous. The 'T' end could have dug in at any time. The rotation was the last act of stupidity and should have been the final straw, but I remember rotating quickly - this probably helped me to get away with it, and I noticed nothing.

The consequences could very easily have been catastrophic. The tow bar could have bounced and hit the propeller; the nose leg could have been damaged making for a dangerous landing. On rotation the tow bar could have dug in giving a very quick nose pitch up leading to a stall! It could have stayed attached longer and have fallen onto someone or their property. It could have swung up against the underside of the aircraft removing aerials or worse.

I am now duly chastened and will make certain that the tow bar is safely back in the hangar before I ever start the engine.

The common factor in both of these incidents and many other similar occurrences is that the normal sequence of checks was interrupted.

If in any doubt, start the check sequence again.

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A review of recent accidents reported to the AAIB showed that approximately 50% occurred during the landing phase of flight. Many accidents of this type result in significant aircraft damage/repair cost.

The following reports may raise awareness to some of the contributory causes in these types of accidents:

Fast Landing

I was flying into a Californian airfield with a 5,000ft x150ft hard runway and a control tower. On about 3-mile final I started to slow down from about 100 kts and

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shortly afterwards the control tower asked me to 'keep up' my speed because of following aircraft. I did. I crossed the airfield boundary at about 80 kts with 30° of flap recently applied. However, I was not seriously concerned because of the length of the runway even though I am well aware of the C172's tendency to float. I touched down about 1/3 along the runway and, as I braked, I lost directional control and the plane ran at about 30° to the main runway into the very wide hard taxing area and eventually stopped. I discovered that the right main tyre had burst.

I subsequently learned that if the plane is going fast, even after touchdown, there can still be a significant amount of lift which reduces the frictional force of the runway on the wheels relative to normal braking force. This can cause the brakes to lock.

I learned the following lessons:-

1. The possibility of this type of incident of which I was not previously aware.
2. The Controller does not have to land the plane safely. You do. You should not accept an instruction with which you are not comfortable. If necessary offer to go around.
3. The accident could have been much worse in a typical UK airfield with narrow soft verges to the runway and, sometimes, planes parked close by.

Further to the reporter's own reflections, a good landing invariably follows a good approach flown at the correct speed. If this is not possible for whatever reason, a go-around is usually the best option.

With a tricycle gear configuration, touching down at a speed significantly above that recommended by the manufacturer will reduce the weight on the main wheels or, in an extreme case, may result in a nose-wheel only touchdown. In either case, braking should be delayed until sufficient weight is on the main wheels and commenced with care.

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Reduced Margin For Error

The strip that I use for flying my flexwing micro is 450m and approx 100m usable with a further 100m width with a steep down slope to East. The field is on top of the Downs and 350' above surrounding area. The 450m flat area runs N-S.

I have flown from this field for most of my hours and am aware that when the wind is easterly and above the cross-wind capability of my aircraft, landings NW-SE approaching over low power cables can be made but entail landing towards the dropping ground and require care as my flexwing has no braking system.

On this bright and warm day the wind was 12/15kt easterly, the field contained ewes and new born lambs and was in use by a small number of para-gliders soaring to the east slope.

I made several trips with both take-off and landings in the manner described above being uneventful.

I then agreed to give a flight to a local landowner. I considered the extra weight and approach speed to be acceptable with the wind speed and conditions. Take off and local flight made and conditions were good. On return, approached again from Northwest over cables and touchdown point selected approx 1/3 into field. As cables were cleared a ewe and lamb walked into the selected landing spot.

Power applied to delay touch down till sheep cleared. I was paying a lot of attention to the sheep and cut power and touched down as soon as sheep cleared. Touch down was good and smooth but I then realised that the aircraft would not stop before reaching the start of the down slope. Advised passenger that I was going to take off again (off the side of the hill and into wind). I applied full throttle; engine then died. In absence of brakes aircraft was steered to lessen the angle travelling down the slope and collided with a wooden fence.

Pilot suffered bruised ribs, passenger uninjured, trike had heavy damage. After vacating aircraft, I found the ignition key had been switched off (key is located on seat frame RHS and had been pointed out to passenger as part of pre-flight).

Causes:

1. Decision to take passenger with wind from east reducing margins for error.
2. Becoming too fixated on one hazard (sheep) and not carrying out go around at that stage.
3. Key easily inadvertently switched off by passenger. WILL NOW BE FITTED WITH A GUARD.

When considering whether to take off or land in marginal conditions, the BMAA Technical Information Leaflet No. 006 contains some very useful advice and is available on the BMAA website.

Also, as the reporter notes, if you encounter an unexpected hazard during a landing, an early decision to go-around is usually the best option.

The BMAA advises that in more recent models of this type the ignition key system has been replaced by a switched system.

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Turbulent Landing

My usual airfield is 550 metres long lying Northeast to Southwest across the valley but due to silage making

operations I was using a smaller field - 200m - also running Northeast to Southwest, which due to steep ground and high tension lines at Northeast end can only be approached from the Southwest. The approach was turbulent and a severe sink-rate, which I think was due to rotor effect, caused me to collide with the boundary fence. The result was severe damage to the starboard wing and light damage to the port wing. The fuselage - engine, prop, tailplane & rudder - were untouched, as was the pilot.

In retrospect I shouldn't have used this field, as it was always tricky.

Always consider the weather and wind conditions in relation to the airfield/strip characteristics. Just because they haven't been a problem in the past, it doesn't necessarily mean that they will never be.

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DOWNDRAUGHT ENCOUNTER

The flight preparation was carried out for a cross-country trip and NOTAMs checked. Met was checked and the surface wind was forecast as Easterly at 15 knots. The Northerly runway was in use, length available just over 1000m. The Met mentioned turbulence and a 2,000ft wind as 130° at 30 knots. The aircraft weight and balance was checked and was in limits, with only 15 gallons of fuel instead of full tanks, and 2 crew. The aircraft max demonstrated crosswind limit is 20 Kts.

After a walk round was completed the aircraft was deemed serviceable and crew embarked. Start-up and taxi out revealed no defects apart from the fact that the carb heat seemed to vibrate out a fraction but when pushed back in seemed to stay put. Power checks were completed with no apparent faults and mag drops were within limits. The take off roll was commenced with the windsock showing approximately a 70° right crosswind at 15 knots. Into wind aileron was used and 2 stages of flap. This aircraft is fitted with flaperons. Rudder was used to keep the aircraft straight. The aircraft became airborne at 50kts at half way down the runway and was held in ground effect to reach climb speed of 60-65kts. Upon reaching this speed the aircraft was brought into the climb attitude but started to sink back down towards the runway. At this stage of the flight it was too late to land ahead so I elected to continue the climb as best as I could. The end of this runway has trees to about 30 feet to the right of the runway 20 threshold on the windward side. The aircraft climbed to approximately 50 feet and then stopped climbing as we passed the end of the runway. We had quite severe turbulence as we passed the trees. At this time I was checking fuel pump, throttle, mixture, carb heat etc to establish if we had any problems but indications of RPM suggested all was fine with temperatures and pressures in the green.

This runway requires a noise abatement turn to the left of runway heading to cross the narrowest part of the village which then meant we had a tail wind component. The aircraft was kept at 65 knots with 2 stages of flap and would still not climb. After clearing the village, I called the Air/Ground operator to explain that I would carry out a turn to the right into wind to see if I could increase the climb rate, which at this stage was negligible at 50-100 fpm. This improved our situation slightly but we encountered further turbulence and it took a further 10 minutes to struggle up to 800 feet. We turned back towards the airfield as a precaution and landed on runway 02 encountering high sink rates and turbulence on approach. At some stages of the approach, full power was required to keep the aiming point.

The ### hills are just to the right of this runway and the wind was blowing over the hills and down to the airfield. In hindsight I feel that I should have considered the effect of the ### hills on the airflow over the airfield.

Although the aircraft was operated within crosswind limits the effect of the turbulence, with virtually no headwind led to a severe decrease in performance in an aircraft which has limited performance anyway. The Runway is short mown grass and was dry on the day of the flight with no upslope to affect performance. Having operated from this airfield for seven years, I did not feel it necessary to complete a take off distance calculation as the aircraft has never had this problem before in a cross wind. Complacency took over here and I think I have learnt my lesson.

In gradient winds of above 15 knots, significant downdraughts can occur in the lee of high ground or local features such as large buildings/trees; these can cause a serious degradation in the performance of a light aircraft. (Aeronautical Information Circular No. 6/2003 offers further advice on this topic).

In the reported meteorological conditions and in an area susceptible to downdraughts, careful thought should be given to flying light aircraft with a modest climb performance in strong, gusty wind conditions.

If downdraughts are encountered avoid flying parallel to the hills or turning into wind towards the high ground; the strongest downdraughts will normally be adjacent to the hills.

One further point, the maximum demonstrated crosswind is not a limit, unless the Operating Manual states that control was limiting; it is the maximum crosswind condition that has been demonstrated by the manufacturer.

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ACCIDENT TO REPORT?

Call AAIB on Tel No : 01252 512299

CO Detectors

Following the routine replacement of one of the most common types of CO detectors, I decided that I would carry out a crude, self motivated test to the efficiency of the removed item.

The CO detector in question was in its fifth month of being open (advertised life from opening is six months) and 33 months from manufacture (shelf life is stated as three years). The test consisted of positioning the tester with spot side to the exhaust outlet of a non-catalyst car that produces a CO content of 2.5 % in volume. The spot only changed colour in a positive way after approximately 10 minutes, while remaining in the blast of the exhaust (some 6" from the outlet) in such a manner that any surrounding air was positively displaced from the tester. Allowing the tester to recover from the contamination, I further tested it in a similar manner with the exhaust of a classic car that when fully warmed up gives a 7% CO emission, but in this case it was carried out while in cold mode with a much higher (not measured) CO content. This time the spot changed colour in some 2 minutes.

Being alarmed with this result, I carried out an identical test with a freshly open item and 35 months old from manufacture and the time, as per the first test, was down to 4 minutes.

I have always flown with one of these testers when the warm air vent is operating and expected to have the tester to warn me of an exhaust leak. I now realise that this may not give me sufficient warning of a CO poisoning situation and makes me wonder how many people are under the same misapprehension.

The performance of spot detectors may vary considerably depending on the ambient environment and their exposure to a range of contaminants, such as windscreen cleaning agents and perfumes. Also, some spot detectors do not recover after exposure.

CAA (SRG) is investigating the effectiveness of CO detectors, as a result of a recent AAIB fatal accident investigation. CAA General Aviation Safety Sense leaflet No.24 currently states "..the paper (CO) sensors do need to be changed fairly frequently to be of value." Hopefully, the CAA investigation will result in improved advice being offered on this important topic.

Other types of CO monitor are now readily available, although it should be noted that fitting some of these may constitute a modification.

Remember, CO is colourless, odourless, tasteless and lethal.

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Two's Company?

The event occurred in excellent VFR conditions, with a few clouds around 3,000ft. The flight was from AAA to a rally at CCC via BBB. The arrival procedure for entry to the rally was very clear and had been carefully planned out.

After a normal departure from AAA, ### Radar (who were extremely busy - we were No 3 in the queue) was contacted for a Flight Information Service; a Squawk was given and the QNH. In the right seat was another qualified PPL who would be flying the return leg.

The right seat pilot was studying the chart on his lap and suggested climbing to our cruising altitude of 3,000ft. I pointed to the chart and asked, "Are you sure we are clear of all the 2,500ft restrictions of the London TMA". He studied the map again while I was concentrating on flying the aircraft (there were a few clouds above us and I wondered whether at 3,000ft we would be in them), he confirmed we were well clear and no longer restricted.

Mistake No 1: I failed to fully establish our position for myself and relied on my colleague's assurance. Radio traffic was very busy, my colleague was talking and we also had trouble with headset volumes. His was too loud and mine were not loud enough. With all this going on, I thought I heard our callsign and "descend to 2,400ft now".

Mistake No 2: I foolishly turned to my colleague and asked whether that call was for us, instead of questioning on the radio. My colleague replied, "No, that was for someone else". How could it possibly be for us I thought, after all we were well clear! Wrong.

The controller shortly contacted us again, asked for our QNH and level which was now 2,900ft. He informed us although we were now clear; we had earlier entered into the ### TMA.

I have learned several valuable lessons from this unfortunate experience:

1. I should have verified position for myself before climbing.
2. I should have questioned the controller and not my colleague.
3. I could have descended as a precaution.
4. I was P1 and have to accept full responsibility for the errors made.

The situation of two pilots with similar experience flying together can lead to the type of problems described above. To avoid this, a detailed pre-flight briefing to define what, if any, tasks the non-handling pilot is to undertake is recommended.

Also, as the reporter notes, if in any doubt about an ATC instruction, check with the controller directly.

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