



SAFETY

Jack Frost – your perfect flying buddy



Winter flying can be great, says BMAA Safety Officer **John Teesdale**, but it comes with its own risks and precautions

BY now you should have finished the last of the turkey and mince pies and be looking forward to using whatever Santa brought you from your aviation wish list.

Perhaps a new GPS or navigation software programme for your tablet or phone? Heated gloves or flying suit? Fur-lined boots?

Winter can, of course, bring some fantastic flying weather: crisp, clear days with stunning visibility and cold, stable, smooth air make flying microlights an absolute joy.

But let's make sure we are aware of the risks and manage them sensibly, so we can enjoy our flying to the full. Yep, it's that threat and error management again.

During the summer, your decision to go flying will probably start by considering the weather. In winter, particularly if you fly from a grass strip, the state of the runway may well be the deciding factor, so let's look firstly at...

Runway or runaway?

If you fly from a grass strip, you will need to recognise the risk of skidding both during takeoff and landing on wet and/or muddy ground.

A light covering of snow doesn't necessarily mean you are grounded, especially from tarmac strips, but just as with muddy ground, you must be ready for skidding.

Fresh or wet snow can be very slippery, although with a bit of frost to make the surface crusty, it actually holds the aircraft straight very well. The depth of snow you can handle obviously depends on your wheel diameter. There comes a point when you need skis, as used by Dave Sykes for his attempts to fly to the North Pole.

From muddy/wet surfaces or snow, takeoff distance is much increased, and braking effect is either much reduced or non-existent. If your field is tight with dry ground, it may be impossible when wet.

Don't just guess and hope; take positive action and calculate the actual distance you need. Start with the distance given in your aircraft's pilot operating manual, then use realistic safety factors such as in the CAA's *Safety Sense Leaflet 7, Aircraft Performance*.

So, you've decided the runway is OK, next it's...

Weather – or not?

As a pilot, you will be obsessed by watching the weather anyway, and winter is no time to relax. Here are some pointers:

Look firstly at wind direction, ie where the air is coming from. If there is a lot of north or east in it, then it's going to be cold, and in winter there is a good chance of snow, especially on the eastern side of the country.

Look at the difference between ambient temp and dew point, either from a local Metar or your airfield weather station. High relative humidity may mean poor vis, which coupled with a clear sky and light winds could mean radiation fog forming.

Damp air means the risk of carb ice is increased. Make regular checks when flying, and use carb heat if fitted, in accordance with the aircraft's pilot operating manual.

Look up *Form F214* to find the freezing level and the temperature at the altitude you intend to fly. In open cockpit types, make sure you *and your passenger* are wrapped up well. The effect of wind chill in winter is often underestimated. As well as the hands and face, neck and ankles need protection.

So, the weather is OK, now let's think about...

The aircraft and you – prepared?

Let's look at the aircraft first.

Most importantly, *do not go flying with any ice, frost or snow on the aircraft at all*. Even small amounts on the flying surfaces will have a dramatic adverse effect on lift. There have been at least two fatalities in the past resulting from flexwings going flying with hoar frost on the wings.

I very nearly came a cropper myself once after the lightest of very fine snow flurries passed over while the aircraft (a P&M GTR) was standing outside.

I rubbed my hand over the wing and could not actually push any snow together, it was such a fine dusting, so I stupidly thought it would blow off during the takeoff roll. Wrong! I got a massive shock when I almost stalled on climbout and had to maintain over 55mph until touchdown. It flew like a brick.

Mud and snow are heavy; think about where it all goes after it leaves the wheels. If you have spats, it will fill them with significant weight. If you don't and you have a low-wing aircraft like a Eurostar, it will plaster the underwing, fuselage and tail surfaces. This again adds extra weight and may have an adverse effect on the aerofoil sections.

On flexwings, the mud tends to be thrown into the prop, which is never going to improve thrust.

Some engines do not have oil or water thermostats, and rely on adjustable covers on the oil and/or water radiators. If your aircraft has these, make sure they are adjusted correctly for ambient temperature so that your warm-up time is minimal and the engine runs at the correct temperature. Remember to adjust them back when the weather gets warmer to avoid overheating.

If you've got a cabin heater, you will be making good use of it. Check the condition of the exhaust, particularly around the heater jacket for cracks. This is a common way for carbon monoxide to enter the cockpit. This is a silent killer, and usually the only recognisable symptom is the onset of a headache. So it's best to open the window vents and return to base if you feel one coming on.

GPS batteries give up sooner when it is really cold, and screens can fail.

Now you and your passenger...

I've already mentioned being suitably dressed, especially in an open cockpit. If you have invited a friend who hasn't flown before, they usually have no idea how cold it is aloft, and rarely arrive in suitable clothing. Make sure they are properly toggged up, and brief them on what to expect.

Some people will suffer hypothermia before they complain, thinking that they don't want to upset you because you've gone to so much trouble to take them up, so brief them to tell you immediately if they are uncomfortable.

If you get very cold, remember it's not just an inconvenience, it's also very distracting and can seriously affect your judgement. Last year, a flexwing pilot flying to Ireland from GB got very cold flying over the Irish Sea. He crashed on landing, and put the reason down to being so cold he could not think straight. So, best return to base before this happens.

In an open-cockpit aircraft, it's difficult enough fiddling with radio frequencies and GPS without all

“ I almost stalled with only a fine dusting of snow on the wings. I had to maintain over 55mph until touchdown. It flew like a brick



Above
Can you see the airfield in this picture?

Facing page
Clear all snow or ice off the aircraft



SAFETY

▷ the winter gear on. Think ahead about how you are going to operate the aircraft systems without losing anything overboard.

Don't get lost!

The landscape looks very different from the air when snow-covered. Can you see the airfield in the picture on p14? (It's Baxby, aka Hushwaite, run by the lovely Dave and Elaine Smith.)

If you have to make a diversion, bear in mind that the airfield may be snowed in!

And don't forget those short days. Sunset is about 4pm on 1 January, and doesn't reach 5pm until 4 February.

Have you got the skills and experience to handle the conditions? If in doubt, get some help from an instructor. If you are in any doubt, there's no shame in staying in the clubhouse with a hot mug of tea. Oh, and Hobnobs of course.

Safe flying and stay warm! □

With thanks to Andy Buchan and Rob Mott for their contributions

TECHTALK

Screwdrivers at dawn

Paul Kiddell may be an aging rocker, but he can still get on with mods



I LOVE winter flying in clear air over snowcapped mountains, but it's also an ideal time to take stock and get all those little jobs done to prepare for the long days of summer.

The only problem is that those little jobs sometimes assume epic proportions, and that's exactly what happened with our seemingly straightforward quest to install a new 8.33kHz radio.

While working out how to fit the new radio in preparation for the big changeover, our four-man syndicate concluded that our panel was looking a bit tired.

In her 2200h with two busy syndicates, our Eurostar has hosted many different GPS, tablet and phone mounts, and there were so many redundant mounting holes that it looked like someone had fired a shotgun into the panel.

As a result, we took the bold decision to start afresh with a new blank instrument panel, sourced from Eurostar dealer LSA.

After considerable research, we decided to replace our trusty Icom with a Trig TY-91 8.33kHz dual-watch radio.

We would add a Kanardia Horis 80 electronic Air Data & Attitude Heading Reference System (AD-AHRS) while permanently installing our Pilot Aware (PAW) and its Charge4 power source which would also power our phones and tablets.

Above The old panel at V_{ne} during a permit flight test (left); and shiny new panel (right)

Ever-enthusiastic partner Alex Smith set off to produce some panel layout options while I investigated the mysterious BMAA modification process.

Guided by our inspector, Chris Theakstone, (who built our aircraft at Cosmik in 2008 and has looked after her ever since), I downloaded the BMAA *Technical Information Leaflet (TIL) 002* as a starting point.

Essentially, if an owner wishes to modify the design of his or her aircraft, whether by making very ▷

Modifications: BMAA Tech Office top tips

Do send details – a description with sketches or photos – of your proposed modification, together with the application form AW/002a.

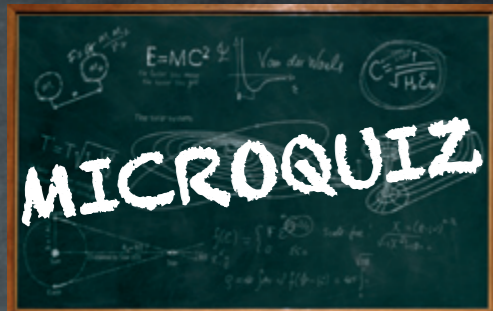
Do use Standard Minor Modifications for common changes, such as radios, transponders, strobes and carb heat – and **do** discuss these with your Inspector before starting work.

Don't modify your aircraft and expect the inspector to "approve" it at the permit inspection – unless it's a Standard Minor Mod.

Don't make permanent changes to your aircraft until they're approved!

And finally...

Unless you're repairing damage by bolting on a replacement part, the repair is also a "modification" probably requiring approval, so **Do** contact the tech office before starting work.



THIS month's quizmaster is Aaron Bliss, the BMAA's Pilot Licensing, Instruction & Examinations supremo, with some licensing teasers to test your memory.

1 The UK NPPL guarantees the holder flight in:

- a Europe
- b UK and Ireland
- c UK only

2 A holder of a current SEP rating needs to do which of the following in order to exercise the privileges to fly microlights:

- a Pass a General Skills Test in a microlight
- b Complete differences training with a microlight instructor entitled to conduct the training
- c Pass the microlight air law exam

3 Which two documents should be displayed by a student flying their microlight school's aircraft at their first solo training flight?

- a Proof of age and valid medical
- b Valid medical and aircraft certificate of validity
- c Insurance certificate and training record

4 A UK National Private Pilot's Licence is recognised by:

- a UK CAA and EASA

- b ICAO and UK CAA
- c UK CAA only

5 Which of the following does not entitle the holder to fly microlights:

- a UK NPPL (M)
- b EASA licence with valid SEP and microlight differences training completed
- c UK NPPL SSEA with microlight differences training completed

6 To revalidate a UK NPPL microlight rating, a pilot should have completed a minimum 12h total prior to the expiry date of the rating, incorporating a minimum time as pilot in command of the aircraft of:

- a 10h, with up to 2h of the 12 total as dual training
- b 8h, with up to 4h of the 12 total as dual training
- c All hours must have been solo, as pilot in command

7 A UK NPPL microlight rating can be revalidated without losing currency:

- a Only on the expiry date, provided all requirements are complete
- b Up to three months prior to expiry date, provided all requirements are complete
- c At any time in the second 12-month period, provided all requirements are complete

8 A UK NPPL which has been updated for an address change has had the microlight rating moved to the back of the document, in the "Ratings previously held" section, as the CAA was not provided with evidence of rating currency. Which

of the following can renew this rating in this case:

- a The UK CAA only, following a passed GST in a microlight
- b A current microlight flight examiner, following a passed GST in a microlight
- c A microlight revalidation examiner, having confirmed that hours requirements have been satisfactorily completed in 24 month period in logbook

9 A UK NPPL could potentially hold microlight, simple single-engine aircraft and self-launching motorglider ratings, and the holder can keep them all current by combining hours requirements. Providing all standard requirements are completed cumulatively between the class ratings, the minimum time logged to keep any individual rating current is:

- a 6h solo
- b 1h solo plus 1h with instructor
- c 1h solo or 1h with instructor

10 The precursor to a UK NPPL (M) is a UK PPL (Microlights), which operates on a different revalidation cycle. To revalidate a microlight rating on the original PPL system, requirements are:

- a 5h in 13 months, all solo, or up to two of these may be with a microlight instructor
- b 6h solo in 12 months plus a mandatory hour with a microlight instructor
- c 5h in 13 months, plus a mandatory hour with a microlight instructor

Answers on p.19