



the Christian Aviator

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In this issue

- 1 Why under the radar?
'Bye-bye beat-up'
- 2 In-flight break-up
(Images of wreckage)
Tips on engine care
- 3 Failing to interpret
- 4 Aircraft for sale
Coastal properties
- 5 How current is your GPS?

Scripture

Teach me do to Your will.

Psalms 143: 10 a.

Why under the radar?

WE tender sincere apologies for 'going under the radar' for a while – with reference to the disruption in deliveries, after the first successive issues had been so well received. This was due to our 'gyros' almost toppling during relocation to Hermanus and a brief encounter with hospital.

Nonetheless, it seems the Lord may have bigger plans for the publication, perhaps in His mission fields? Whatever the eventual outcome may be, the impetus and growth will depend on you too.

So, we look forward to your contributions. In the foreseeable future we will feature the testimony of an air crash survivor, Lourens Eksteen.

Our target readership will remain Christian believers making use of aviation and associated industries. We will also endeavour to help cast the Light of Christ in other spheres and areas by means of aviation, especially those where only "contract pilots" dare to go.

Meanwhile, we will serve the aviation community with vital safety and market related topics, whilst addressing socio-economic issues from a Christian perspective. After a bad start in terms of air safety for the year, we briefly look at the underlying factors behind the tendencies in 'Beware the 'bye-bye beat-up' and 'How current is your GPS?'

Beware the 'bye-bye beat-up'

WITH the death toll at 14, South African aviation was off to a bad start this year. Preliminary indications suggest at least two accidents, claiming four lives, may be attributable to high-speed fly-pasts at low level followed by steep 'pull-ups'. The manoeuvre has been termed the 'bye-bye beat-up' – See Chapter Five (p. 123) of the air safety book 'Avoiding Fatal Flying Traps'.

Showmanship often triggers pilots. Quite a few accident aetiologies reveal how hapless pilots have met their fate after seemingly being intent on 'greeting' the folks watching on the ground... with a display of 'awe-inspiring' skills. Discussing the principles involved with other aviators suggests a widespread misconception of the true magnitude of aerodynamic forces involved is often part of the problem.

Those attempting such manoeuvres would do well to bear in mind the exponential increase in stalling speed with increase in wing loading during 'high-G' manoeuvres. The momentary high air pressure zones in the boundary layer underneath each wing invariably cause the airspeed-sensors to 'over-read'. Stalling speeds in the Aircraft Flight Manuals (AFM) are tabled for 'One G-manoevres'. **(Images overleaf)**

Beware the 'bye-bye beat-up' - Continued

In high-G manoeuvres 'unload' the aircraft **at the first sign of trouble**



Detached starboard wing



De-laminated horizontal stabilizer



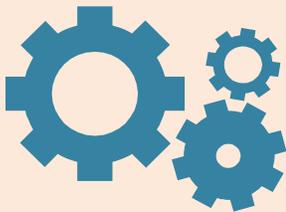
Detached port wing



Shattered main-spar

The images show the remains of an aircraft involved in-flight break-up. No formal findings have been made. However, those involved in 'extreme flying' would do well to remember....

- At the first sign of airflow disruption in flight, such as any 'un-commanded' reaction in any 'high-G' manoeuvre, it is critical to **'unload'** the aircraft **before** attempting any other or further recovery action.
- Therefore, release the pressure on the elevator control even if just a fraction, reduce power where possible (e.g. unless using the engine is needed to avoid hitting the ground) and on all counts keep the wings level... to spread or 'even out' the overall aerodynamic load. Unless vitally necessary to avoid obstacles, do not bank!



We all know the embarrassing situation...

Tips on engine care

Many pilots know the embarrassment of starting an aircraft normally at the hangar and then having difficulties firing up after parking on the apron, having waited for passengers... With fuel injected reciprocating engines this is often due to residual heat building up beneath the cowlings. Due to high volatility Avgas is readily energized by 'residual heat build-up' through conduction, i.e. the liquid literally starts boiling in the lines after shutdown.

- One way to alleviate adverse effects includes applying low-pressure fuel pump **before** start-attempt (then 'off') to suppress 'air-locks' and to avoid 'cavitation' in the high-pressure pump (by providing a 'pressure-head'); and to treat the engine as flooded, following the latter procedure. Stay within AFM prescriptions and limits, especially regarding starter cool-down periods. Opening the flap over the oil dipstick between successive starts will help hot air to dissipate. Equally embarrassing is forgetting to close these!

Failing to interpret weather can be deadly

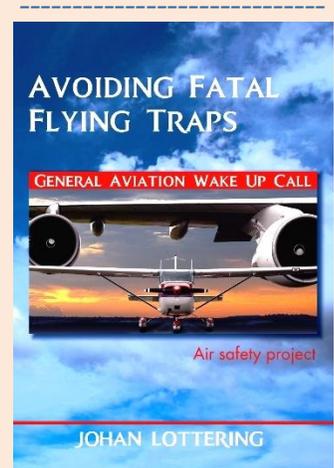
OPERATIONAL pressures can preclude good judgment, especially in the corporate and charter flying environments. Aircrews and especially the single-pilot can be over-eager to please their bosses. Crews (and we are not indicating 'blame' here) of very sophisticated aircraft often find it difficult to delay or cancel a flight with 'all the equipment which money can buy' up front. Large-scale air masses moving up-country in rapid succession can tempt us to take a chance, after being 'weather-bound' for several days. During the PC12 accident at Plett on February 08, 2011 the METAR (Meteorological Aerodrome Report) at the nearest alternative airport, George, on roughly the same latitude, was...

"FAGG 081430Z 20004KT 170V230 4000 DZ **BR BKN002 20/20** Q1015="

The METAR in force during the Beech 90GT accident at Lanseria on 3 February, 2014 was...

"FALA 030500Z 08009KT 030V170 3000 – **TSRA** SCT005 SCT030 **CB** BKN060 **19/19** Q1019 BECMG 4000="

Own bold has been added, bearing in mind 'the devil's in the detail'... The 20/20 and 19/19 in each scenario should indicate the respective sets of Ambient and Dew-point Temperatures coincided hence condensation (could) be anticipated at or near the surface. 'BR' is mist. 'BKN' is the lowest clouds covering more than half the sky (i.e. the ceiling). 'TSRA' signify 'thunder-showers and rain'. If you don't know what 'CB' represents, it may be time to pack it in... Bear in mind, 'visibility' is the horizontal distance which a pilot sees on ground level if parked at the runway threshold. On final approach 'oblique' or 'slant' visibility' can make the runway 'disappear'!



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If I take the wings of the morning or dwell in the uttermost part of the sea, even there shall Your hand lead me and Your right hand shall hold me - Psalm 139: 9 &10

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TRANSGRESSIONS – How current is your GPS?

AT a recent air safety meeting in Stellenbosch an Air Traffic Controller (ATC) based at Cape Town International, Gavin Louw, portrayed statistical data of airspace transgressions. Alarming, 103 classifiably 'serious' incursions had occurred country-wide in the preceding 12-month period. Now, a 'serious transgression' is one where preventative action is needed such as rerouting a flight due to delayed descend clearance. No fewer than 20 such events have taken place in the Cape Town airspace.

ATC Gavin was emphatic that it was only a matter of time 'when' and not 'if' a midair collision would occur between an 'intruder' and a heavy-laden passenger liner.

South Africa has ten major ACSA airports, operated by ATNS. Some airspace 'hot spots' have existed for years. Prime examples include exit points to the easterly and northeasterly airways. Visual Flight Rule (VFR) pilots often need to delay their climb over mountainous terrain, while waiting for either inbound or outbound Instrument Flight Rules (IFR) traffic to clear.

Considering that the 'powers that be' have been duly warned in writing by the then 'Commission of Inquiry in Civil Aviation' in 1981, the subsequent midair collision involving a South African Air Force (SAAF) Merlin and a civilian Piper Navajo in 1982, could actually be laid before the door of those wielding the scepter at the time.

Admittedly, the IFR crew of the SAAF Merlin should not have descended into uncontrolled airspace. Pilots often struggle with the 'legal arrangement' between them and an ATC. Though a flight might be cleared to descend to a designated lower altitude, the onus to maintain sufficient vertical separation with airspaces and terrain remains with the pilot-in-command. The only exception is when the flight has been 'radar identified' AND 'under radar control', i.e. if receiving vectors from ATC.

The VFR crew of the Navajo, though practicing instrument flying under the hood and despite the interception angle from slightly behind and above by the SAAF Merlin, had an obligation to keep a vigilant lookout.

The three sets of misconceptions, i.e. on the part of the respective aircrews and those in aviation governance, all contributed to an airspace calamity claiming 13 lives.

Nowadays, pilots tend to overly rely on their Electronic Flight Information Systems (EFIS), Enhanced Ground Proximity Warning Systems (EGPWS) and last, but not least colour map GPS. Just remember, referring to page 23 of report CA18/2/3/8894 of the investigation into the PC12 crash at Plett on 8 Feb. 2011, it was found the EGPWS had been inoperative on no fewer than 180 legs of the 900 the aircraft had ever flown!

As aviators we readily become de-sensitized to system failures and often try to work our way 'around' recurring system shortcomings or errors. We readily fall into the habit of accepting 'undue' pressure and condoning faults. ATC Gavin has also pointed out transgressing pilots, often present their stored GPS flight memories as proof they had been 'outside' controlled airspaces. Most failed to take into account new 'updated' airspace boundaries. The lesson to all, not only VFR pilots, is to avoid over-reliance on automated navigation systems and to regularly have data bases updated, as regularly as one would an Aerad or Jeppesen Airway Manual. **How current is your GPS?**