1999, Issue 3

VECTOR

Pointing to Safer Aviation

Dangerous Places

The CAA regularly receives reports of aircraft infringing military operational areas and entering danger areas when it is very unwise to do so. Particular areas of concern are in the central North Island and in Canterbury. What are the problems, and how can we fix them?

See *Vector* 1997, Issue 7 for a comprehensive article on various types of airspace. The Safety Education Unit also has under preparation a poster on 'special use' airspace.

Photograph courtesy of the Royal New Zealand Air Force

The Civil Aviation Rules allow 'special use' airspace to be designated where the Director considers it necessary in the interests of aviation safety or security or in the public interest.

Civil Aviation Rules, Part 91 *General Operating and Flight Rules* outlines the requirements for entry into the various types of special use airspace, which includes military operational areas and danger areas

For a military operational area (MOA), a pilot may not enter the area without the approval of the controlling authority. A danger area must not be entered unless the pilot "has established, after due consideration of the type of activity for which that area is designated as a danger area, that that activity will not affect the safety of the aircraft."

These conditions apply when the area is active – if it is not active it reverts to the appropriate class of airspace underlying it.

Information on these areas is listed in the NZAIP *Planning Manual*, including the name and location of the area, vertical limits, active periods (some are permanent, some are advised by NOTAM) and contact details for the controlling authority. The areas are depicted on topographical charts with the code number and vertical limits noted. Activity status (permanent or by NOTAM) is not shown on the charts.

Military Operational Areas

With a military operational area the position is clear – you may not enter an active MOA without approval. To do so is an infringement of the Rules, and you will most likely be putting your aircraft and its occupants in significant danger.

The approval condition is there for a very good reason – military operational areas are established to encompass intensive military operations, including live firing. In some of the incidents reported, the infringing aircraft were in significant danger from the military activities below.

NZM301

There is particular concern about aircraft entering NZM301, Moawhango in the central North Island (the one that bounds the Desert Road and extends to the west). Numerous incidents have been recorded recently. This area (together with others adjoining it) often has intensive activity associated with army operations from Waiouru and air force exercises out of Ohakea. Hence the danger can come from both the ground (being shot at) and from around and above (low-flying air force aircraft on attack missions).

Note that NZM301 and the smaller NZM300 (on the other side of the Desert Road) are both permanently active. (Refer to the Ohakea VTC for detail of the Desert Road corridor and adjoining MOAs).

A couple of the infringements have occurred when VFR aircraft have turned back due to bad weather in the Desert

Continued over...

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...continued from front page

Road area and during the turn have entered NZM301. In one case, live firing was taking place, and the aircraft entered the impact area of an artillery fire mission. The proximity of the MOA to the Desert Road corridor must be borne in mind in deteriorating weather conditions, so that a turnback can be made safely without infringing the area.

Most of the infringement reports contain no reference to bad weather, so presumably it was poor decision-making and sloppy navigation techniques that created the situation. On some occasions, the aircraft were fortunate that live firing was not taking place. For others, only the vigilance and action of Ohakea Radar in notifying army personnel, who – in many cases – were able to halt the exercise, minimised the danger to the intruder. An RNZAF Macchi passed close enough to describe one intruder, so the risk of a mid-air collision can be very real.

On one occasion the army was forced to stop a long-range live firing exercise to ensure the safety of a group of **six** aircraft passing through! What was the group's pre-flight planning and briefing like? Did they cover how a big group could fly safely through a constricted corridor?

The corridor is narrow, but it does have easy features to recognise. Pilots need to be vigilant with their navigation to stay in the corridor and not stray into the military areas, particularly as the area is prone to changeable weather conditions.

A long barrel L-118 Light Gun in action in the Waiouru Training Area (NZM301). This gun is capable of firing a projectile a distance of up to 18 kilometres.

Photograph courtesy of the 16th Field Regiment of the New Zealand Army

NZM304

Another area of concern is NZM304, Raumai, Manawatu – on the coastal VFR route abeam Ohakea. There have been incidents where aircraft have entered the area without obtaining a clearance, and other cases where they have been instructed to remain clear but have still barged through. In one case, air weapons operations were suspended until the aircraft was clear of the area.

This area is active in ATC hours (in effect nearly all daylight hours) or as advised by NOTAM. If you are transiting via the coast, call Ohakea Control to check if a clearance through is possible. If it is not, you must remain clear. This will mean diverting out to sea. If you are having difficulty in measuring or judging a safe distance out, Ohakea should be able to offer radar assistance (refer to the Ohakea VTC).

NZM800

In the South Island, there have been instances of aircraft flying through the permanently active M800, Glentunnel. This small red circle on the chart in the foothills of Canterbury may seem harmless and be easily overlooked, but it surrounds an army magazine, and the hazard to aircraft is very real. Army personnel may be destroying munitions and not see or hear a low-flying aircraft (below the upper limit of 3500 feet) in time to stop the detonation.

Danger Areas

Danger areas encompass a wide variety of activities, including military firing operations, blasting areas, efflux dangers and model aircraft operations. The code number on the chart will not tell you what the nature of the dangerous activity is – reference to the *Planning Manual* listing is necessary (or website, see box). This should be part of your pre-flight planning. You can enter a danger area, but only after assessing that the nature of the activity will not affect the safety of your aircraft. In the case of military operations, such as firing, probably very few of us have the knowledge to make such a judgement – the safe option is to avoid the area, rather than risk finding out the hard way that your assessment was faulty. Indeed, unless you have done your homework properly before leaving home to ascertain the nature of the activity in the danger area, it is a wise course of action to steer well clear of **any** danger area.

In Canterbury, there is an army firing range adjacent to West Melton aerodrome. Part of this permanent danger area, NZD827, is inside the aerodrome traffic zone! (This particular situation is being studied at present by the key parties involved.) There have been a number of incidents of aircraft flying through the area when live firing exercises were taking place. The upper limit is only 1350 feet, but the circuit height at West Melton is 1100 feet, so circuit traffic can easily be in danger. Red flags are flown when the army firing range is active, but by the time you see the flags, you would probably be in the danger zone.

How Can You Avoid the Danger?

So what are the lessons, and what course of actions should you take?

- Do your homework regarding airspace on your route **before** you leave the ground.
- Brush up on your navigation skills, maintain awareness, and take special care near these areas.
- Entering a military operational area without approval is an absolute no-no, and it could put you and your passengers at risk. (The CAA also takes a dim view of such infringements.)
- If you need to operate within a military operational area for any reason (this will apply mainly to agricultural operators and the like), contact the controlling authority and see what can be worked out.
- Be sure you know precisely what activity takes place within any danger area on your route, in order to judge what effect it could have on you. The safest option is to avoid them. ■

There are no pictures, but all the text information that describes MOAs and danger areas and their characteristics, including controlling authority contact details, can also be found on the CAA website, **www.caa.govt.nz.** Look in the "Air Navigation Register" under the "Airspace" section. Most other airspace types are also listed in the Air Navigation Register.

Declaring an Emergency

There has always been a reluctance by many pilots to declare an emergency to ATC, in spite of the clear advice in the Aeronautical Information Publication (AIP) to do so if the situation warrants. This attitude may have filtered down from the airlines who shun what they see as adverse (and increasingly sensational) publicity when, for example, a "Local-Standby Phase" is declared by ATC. In other cases, pilots can be reluctant to 'make a fuss', displaying perhaps a macho attitude in believing they can handle the situation. The thought of having to go through a reporting procedure may also deter some.

When something goes wrong, sometimes our pilot mindset can be such that we believe circumstances do not warrant any outside assistance. A light twin-engine aircraft, for example, is certificated for single-engine performance, and in an engine failure situation it is often hoped that flight can be sustained without incident. However, this and any other type of emergency or reduced performance situation (such as icing) should be advised to ATC so that they understand your predicament and can plan assistance accordingly.

Failure to clearly state the nature of a problem not only prevents ATC from providing assistance, but also (in the worst case) may deprive accident investigators of any leads to explain what led to the burnt-out wreck before them.

Remember that there are two levels of communication, distress and urgency.

- *Distress* is defined as being threatened by serious and/or imminent danger, and requiring immediate assistance (use MAYDAY).
- *Urgency* is defined as a condition concerning the safety of an aircraft, or of some person on board or within sight, but which does not require immediate assistance (use PAN).

The urgency situation is probably the one which is not advised as often as it should be. If you declare an urgency situation, it is possible that the problem may be resolved (or alleviated) before it becomes a distress situation. If the problem is resolved or a safe landing made, don't forget to cancel the MAYDAY or PAN.

"Aviate, navigate, communicate" has been offered as a reason for this observed reluctance to tell ATC when a problem occurs. This nifty aphorism is intended to remind pilots of the correct priority of actions at all times – not just when there is a problem. It does not mean that the first and second should be addressed and the third excluded. Once the aircraft is under control, and height and track are as safe as possible, **tell someone** what has happened. They can help. Except in the worst cases, an emergency call or advice to ATC should be possible shortly after the immediate actions are complete. Note that setting 7700 on your transponder as part of the immediate actions will alert ATC to your predicament – do this as soon as possible and follow up with a radio call.

The Emergency section in the *Visual Flight Guide* or *Instrument Flight Guide* should be reviewed at least annually. When possible, transmission of **all** the elements of the appropriate message will give ATC, or the receiving station, all the information they need to give prompt assistance, without intruding on the pilot's handling of the emergency situation. If you don't get a reply to your call (for light aircraft, intervening terrain may sometimes prevent the transmission being picked up by an ATS unit), don't hesitate to transmit blind – it is likely that someone will pick up your transmission. In a recent fatal accident, the pilot was heard to call ATC, but because ATC's response was not received, the pilot gave no further information. Transmitting the nature of the problem may have shed light on the cause of the accident.

So, if you have a problem, speak up. Use PAN or MAYDAY as appropriate. Give complete information. Transmit blind if necessary. Cancel the PAN or MAYDAY if the situation is resolved or a safe landing made. ■

Airframe Icing

*Last winter a pilot experienced severe airframe icing in a single-engine aircraft while on a private IFR flight in the Southern Alps. He kindly agreed to share his experience with **Vector** readers to provide a timely reminder on how dangerous airframe icing can be.*

I had been travelling with my wife and two other friends around the South Island for the week leading up to the day of the incident. The weather had been fairly good considering it was mid-winter – foggy mornings with some low-lying fog that lingered on into the afternoon. Generally, once we got on top of the cloud base, either via a standard instrument departure (SID) or by simply waiting for a big enough hole to appear, we were always greeted with sunshine and smooth flying conditions.

The trip had taken us from Palmerston North to Te Anau via the east coast of the South Island. On the morning of the incident, we planned to leave Te Anau as early as possible and fly back to Palmerston North via the west coast and Nelson. After conferring with Flight Planning in Christchurch, Queenstown Tower, and Milford Sound Flight Information Service, I made the decision to depart later that morning and to stop over in Milford Sound if the weather was unsuitable to progress further.

"…I was flying at full power and the airspeed had dropped to 65 knots. My main priority was to keep the aircraft flying…"

We finally departed Te Anau at around 1130 NZST, making a brief landing at Milford. We departed Milford at 1330 NZST in Visual Meteorological Conditions (VMC) and proceeded VFR to Hokitika. By the time I had filed an IFR flight plan (Palmerston North via Nelson) and departed from Hokitika, however, it was 1700 NZST. I highlighted the route on the IFR chart, prepared a nav log, plotted the track on the topographical map (as well as the Nelson and Ohakea VTC), and obtained weather and NOTAMs. There was no significant icing reported over the north of the South Island below 10,000 feet and the freezing level was reported to be 9000 feet.

We entered cloud at around 2500 feet, but broke out of it at around 5000 feet. The sky was clear for what seemed a long way ahead, even though in the distance there were signs of some stratiform cloud. It wasn't until about 40 NM north of Hokitika that we entered stratiform cloud at 9000 feet. The outside air temperature gauge indicated about minus one degree Celsius, and we were enjoying fairly smooth flying conditions and a cruise speed of 120 knots. According to my calculations, we would be in Nelson in about another 45 minutes. I discussed with my passengers the possibility of staying the night in Nelson, as I was not comfortable with the thought of flying over the Cook Strait at night.

We were now flying in IMC, and I noticed that the aircraft had started to collect ice, which was affecting its performance. Approximately 50 NM from Nelson ice had accumulated to the extent that I was flying at full power and the airspeed had dropped to 65 knots. My main priority was to keep the aircraft flying with a good margin above the stall and, to a lesser degree, to keep my passengers calm. I found it quite easy to become distracted from navigating the aircraft, so I made a conscious effort to keep telling myself "Aviate – Navigate – Communicate". To add to my problems, I now had a 200 foot-per-minute rate of descent. I was aware that the minimum safe altitude (MSA) was 9000 feet on this instrument track, and the further I drifted down the more worried I became. It was not possible to turn back as we were more than two thirds of the way to Nelson.

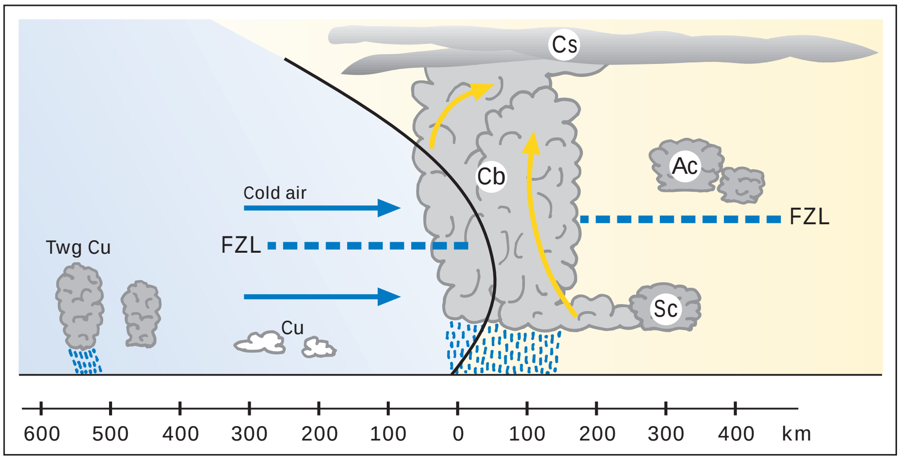
I was following the instrument track as closely as I could while making sure that the track I had drawn on the topographical chart was well clear of high terrain. We were able to obtain radar terrain assistance from Christchurch Control approximately 35 NM out of Nelson so proceeded at 6300 feet to the aerodrome where we landed safely. We continued to Palmerston North the next morning.

Looking back, I realise that there were quite a few factors that contributed to this incident. It started with the late departure from Te Anau. Instead of flying all the way back to Palmerston North we could have stayed in Hokitika or Greymouth and completed the journey the next day. Even with current Instrument and Night Ratings, it was obviously foolish to take on flying in the Southern Alps in a single-engine Cessna with no de-icing equipment. I should not have allowed the approaching low pressure system from the Tasman Sea, which would have almost certainly resulted in a delay of several days, to become a factor that pressured me into a decision that had us 'pressing on' to get home.

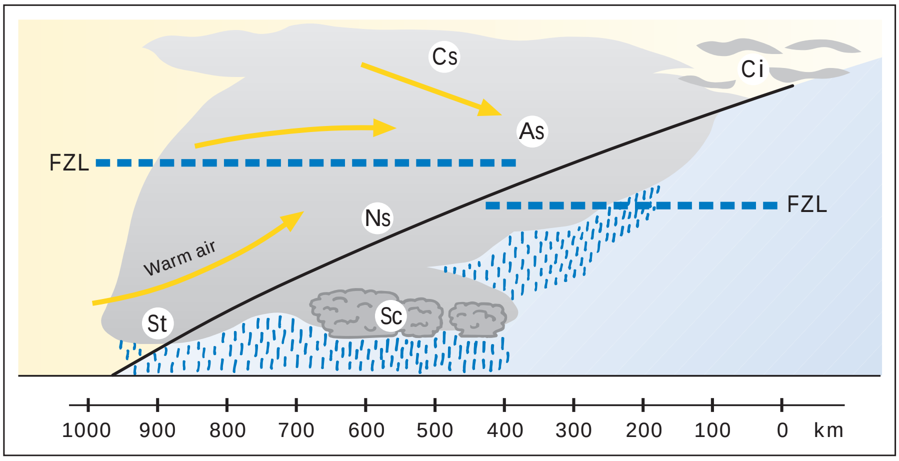
I think that I was fairly confident about doing the flight because I had just spent a week flying the Cessna 172 and had done almost five hours of night flying in the previous month in both single-engine and twin-engine aircraft. I had also flown 7.9 hours of IF time during the month of June (combined actual, simulated, and ground time), and had recently done a BFR and IF competency check. Perhaps I was a little too complacent and overconfident as to my ability to handle the weather.

I realise that I was lucky that things turned out the way they did. I have learned a very valuable lesson from this experience, which will help me to be a better pilot. To prevent this from happening again, I have made it my personal policy not to fly in IMC (night or day) in a single-engine aircraft without de-icing equipment. I now realise how important it is to give yourself plenty of margin when flying close to the freezing level at night. If the published freezing level is 8000 feet, for example, I will not fly above 4000 feet in IMC. I feel that setting this kind of personal minimum is a way of providing a simple go no-go check before leaving the ground in the first place and preventing this type of situation from occurring again.

A cross-sectional model of a cold front



A cross-sectional model of a warm front



The above diagrams show the typical cloud types and freezing levels associated with frontal activity. Freezing rain (this generally occurs when 'warm' precipitation falls into a layer of air where the temperature is below freezing) is particularly dangerous, and can cover an aircraft with clear ice in a matter of minutes.

Source: *Weather to Fly* by Walter Wagtendonk

Vector Comment

Accumulating airframe icing in an aircraft that does not have de-icing equipment while in IMC is an extremely serious situation indeed – especially when flying over high terrain. Airframe ice can accumulate very quickly (as it did in this situation) and will result in a significant increase in stall speed and may result in a drift down to below MSA. Such a situation leaves very few options available to the pilot, and attempting to maintain altitude can often result in a stall and spin with little chance of recovery.

Because of these limited options, it is important that you set conservative personal minimums with regard to MSA and the forecast freezing level en route. While forecast freezing levels associated with large stationary anticyclonic systems are usually reasonably accurate for the purposes of flight planning, those accompanying frontal systems are far less predictable and should be treated with more respect.

We suggest that you do not attempt to fly an IFR route when the forecast freezing level is close to MSA in an aircraft that does not have de-icing equipment. A good rule of thumb is to make sure that the MSA is at least 2000 feet below the forecast freezing level (a difference of approximately four degrees Celsius in standard conditions). This is particularly important if there is frontal activity forecast in close proximity to the chosen instrument route. You may wish to set more conservative personal minimums.

Determining what the freezing level might be for all legs of the route is an area of flight planning that deserves attention. A thorough understanding of the moisture and temperature characteristics of air masses associated with frontal systems, combined with the ability to extrapolate the forecast freezing level, generally allows the en-route icing potential to be determined.

Keeping an eye on the outside air temperature and watching out for reductions in aircraft performance and erroneous instrument readings (you may not always be able to see ice building up on the airframe) while en route is important too.

If you begin to accumulate airframe ice (assuming your aircraft does not have de-icing equipment) then you should request a lower level from ATC. If this does not alleviate the problem and you begin to drift down, it is imperative that you advise ATC of your predicament immediately (usually a PAN call) before you are forced below MSA – they may be able to provide radar vectors which ensure terrain clearance. Such an urgency call needs to be made before radio reception is lost, it will help pin-point your last known position for search and rescue purposes should it come to that.

Always pay close attention to the relationship between freezing level and MSA when planning an IFR flight. If the forecast freezing level is close to the MSA of an instrument track, do not attempt that route – the risks are too great. ■

More On Static

In 1998 we featured two articles on static electricity build-up during refuelling, "Static in the Fuel?" in ***Vector*** *1998, Issue 4 and "Static in the Operation" in Issue 5. We have since had a query from a reader about current bonding practice and equipment. This item focuses on the practical steps to take to ensure safe bonding.*

Static Build-up

First, we will quickly recap on the situations which foster static build-up that makes bonding necessary.

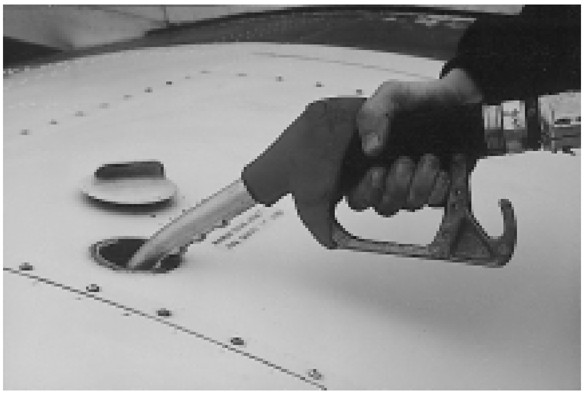
- **Fine filters.** The use of fine filters is unavoidable within the aviation industry. The effect of having a fine filter in a fuel line is to bring more fuel in contact with a dissimilar material of the filter, resulting in higher charge separation.
- **Flow rate.** The flow rate has an effect; higher speeds result in greater charge separation and also more fuel splashing.
- **Splashing.** If splashing or spraying occurs during the refuelling process (most likely during top-loading of a tank) a charged mist or foam can be produced.
- **Hot and dry.** Hot and dry conditions pose the greatest atmospheric risk.

Bonding and Grounding

The first article referred to bonding the aircraft, ie, "connecting the metal structure of the aircraft to earth – via a cable or other conducting path." The diagram accompanying that article showed three bonding or grounding connections: from the refuelling vehicle to earth, from the aircraft to earth, and between the refuelling vehicle and the aircraft.

Fuel company safety procedures generally have a statement along the lines, "the aircraft, fuelling vehicles, fuelling cabinets, hose trigger nozzles and funnels must be electrically bonded together throughout the fuelling operation, to ensure that no difference in electrical potential exists between the units." A similar statement is included in a GAP (Good Aviation Practice) booklet on aircraft refuelling which is currently under preparation and which includes some advice formerly given in the old CASO 5.

In recent years there has been a change in philosophy and practice with regard to grounding. In the 1990 edition of the [US] National Fire Protection Association Standard for Aircraft Fuel Servicing (NFPA 407), the requirements for grounding were deleted and requirements for bonding clarified.



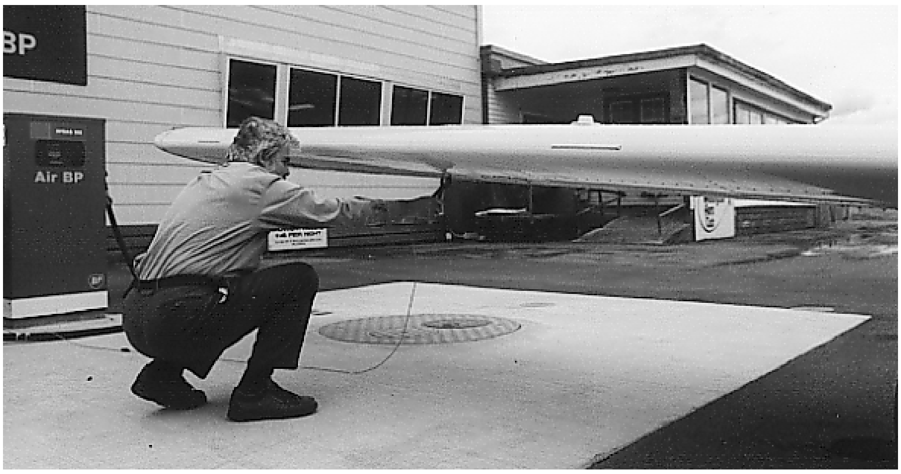
The fuel pump nozzle should be kept in contact with the side of the filler neck at all times while fuel is being delivered. This ensures that a potential difference does not develop between the area surrounding the filler neck and the nozzle.

The Standard notes that the primary electrostatic generator is the filter-separator, which increases the level of charge on a fuel by a factor of 100 or more compared with flow rate. Splashing, spraying or free-falling of the fuel will further enhance the charge. When charged fuel arrives at the receiving tank, either the charge will relax harmlessly to ground, or, if the charge is sufficiently high, a spark discharge may occur. Whether or not ignition will follow will depend on the energy (and duration) of the discharge and the composition of the fuel-air mixture in the vapour space, ie, whether or not it is in the flammable range.

No amount of bonding or grounding will prevent discharges from occurring inside a fuel tank. Bonding will ensure that the fuelling equipment and the receiving tank are at the same potential and provide for the charges separated in the fuel transfer system (primarily the filter-separator) to combine with and neutralise the charges in the fuel. Also, in overwing fuelling, bonding will ensure that the fuel nozzle is at the same potential as the receiving tank, so that a spark will not occur when the nozzle is inserted into the tank opening. For this reason, the bonding wire must be connected before the tank is opened.

The NFPA 407 standard outlines that grounding is no longer required because it will not prevent sparking at the fuel's surface. Also, the static wire may not be able to conduct the current in the event of an electrical fault in the ground-support equipment connected to the aircraft (eg, a ground-power unit or generator), and this could constitute an ignition source if the wire fuses. (Separate grounding connections must be made for equipment that requires electrical earthing.) Static electrical grounding points may have high resistances and therefore are unsuitable for grounding.

The draft GAP booklet reflects these changes.



Securely attaching the bonding wire to a non-painted metallic surface (one that can convey an electrical charge to or from the aircraft fuel tank) before refuelling begins will equalise any potential difference that exists between the aircraft and the fuel pump.

Bonding Procedure

So, what are the practical steps to ensure adequate bonding when refuelling?

Fuelling from a tanker is normally carried out by qualified oil company personnel. Refuelling by pilots is mostly carried out from a fixed cabinet.

Fixed Cabinet

- Unreel the bonding cable supplied beside the cabinet and connect the clip to a bare piece of metal on your aircraft. This should be completed before any hoses are connected or tank filler caps are opened.
- Equalise electrical potential by touching the nozzle to the metal wing surface or fuel cap **before** opening the cap. (Nozzle clips are no longer supplied at Avgas pumps, as fuel flow rates are low – the current oil company requirement for a nozzle-bonding wire is for flow rates exceeding 200 litres/minute.)
- Keep the nozzle in contact with the side of the filler neck while refuelling. (To avoid scratching the paint on the wing, use a mat, or take care to hold the nozzle clear and not rest it on the wing.)
- Keep the flow rate down in situations that you think may warrant further precautions (eg, hot and dry conditions).

Helicopters are sometimes refuelled while sitting on wooden trolleys. Other refuelling situations sometimes occur, such as refuelling in the field from small trailer tankers, drums or portable containers. In all situations, careful attention to bonding and to the other precautions listed above is essential. It is important that specific instructions are available (preferably at the point of fuelling) appropriate to the type of refuelling taking place.

Portable Containers

Some small aircraft, such as microlights and some homebuilts, can be fuelled with mogas. (The following advice is also applicable when you are at a service station filling cans for your outboard motor, lawnmower, etc.)

- Turn off the vehicle engine, and extinguish cigarettes.
- Use an approved container.
- Place the container on the ground.
- Keep the nozzle in contact with the container inlet during fuel transfer. (This is particularly important when refuelling jet-skis, etc, that have to remain on a trailer.)
- Keep the rate of flow down; never lock the nozzle trigger in the open position.
- Do not fill the container more than 95 percent full.

Similar precautions should be taken when draining fuel. Draining should be done outside, not in a hangar.

Funnels

The US Standard (NFPA 407) states that plastic funnels or other non-conducting materials can increase static charge generation. The use of chamois as a filter is extremely hazardous.

Composite Aircraft

A composite aircraft is more likely to develop and sustain a static charge because of the low conductivity of the fibreglass structure. Many homebuilders attach an internal grounding wire from the tank filler neck to an appropriate metal point on the aircraft that is able to have a grounding clip attached. It is also wise to take the precaution of touching the hose nozzle to the metal filler neck or cap **before** removing the tank cap. Keep the nozzle in continuous contact with the filler cap.

Recent research in the United States has shown that wiping a water-soaked rag over the wing surface around the fuel cap of a composite aircraft – where static charge is likely – will dissipate the charge. ■

Tech Logs Again

*The following are some additional points in relation to the recent article on aircraft technical logs that appeared in **Vector** 1999, Issue 1. It may be helpful to refer to that article while reading this.*

Maintenance Due

Pilots should always carefully check what ‘out of phase’ maintenance and inspections are due (eg next magneto overhaul, ELT battery replacement, and propeller overhaul) in the ‘Inspections Due’ and ‘Maintenance Due’ panels of Section 1 during the pre-flight inspection. All maintenance that is due prior to the date the aircraft is to be flown **must** be clearly signed off in Section 3 ‘Maintenance Arising’ and Section 4 ‘Rectification or Deferral Action’. If this is not the case, the aircraft is **not** airworthy and can not be flown.

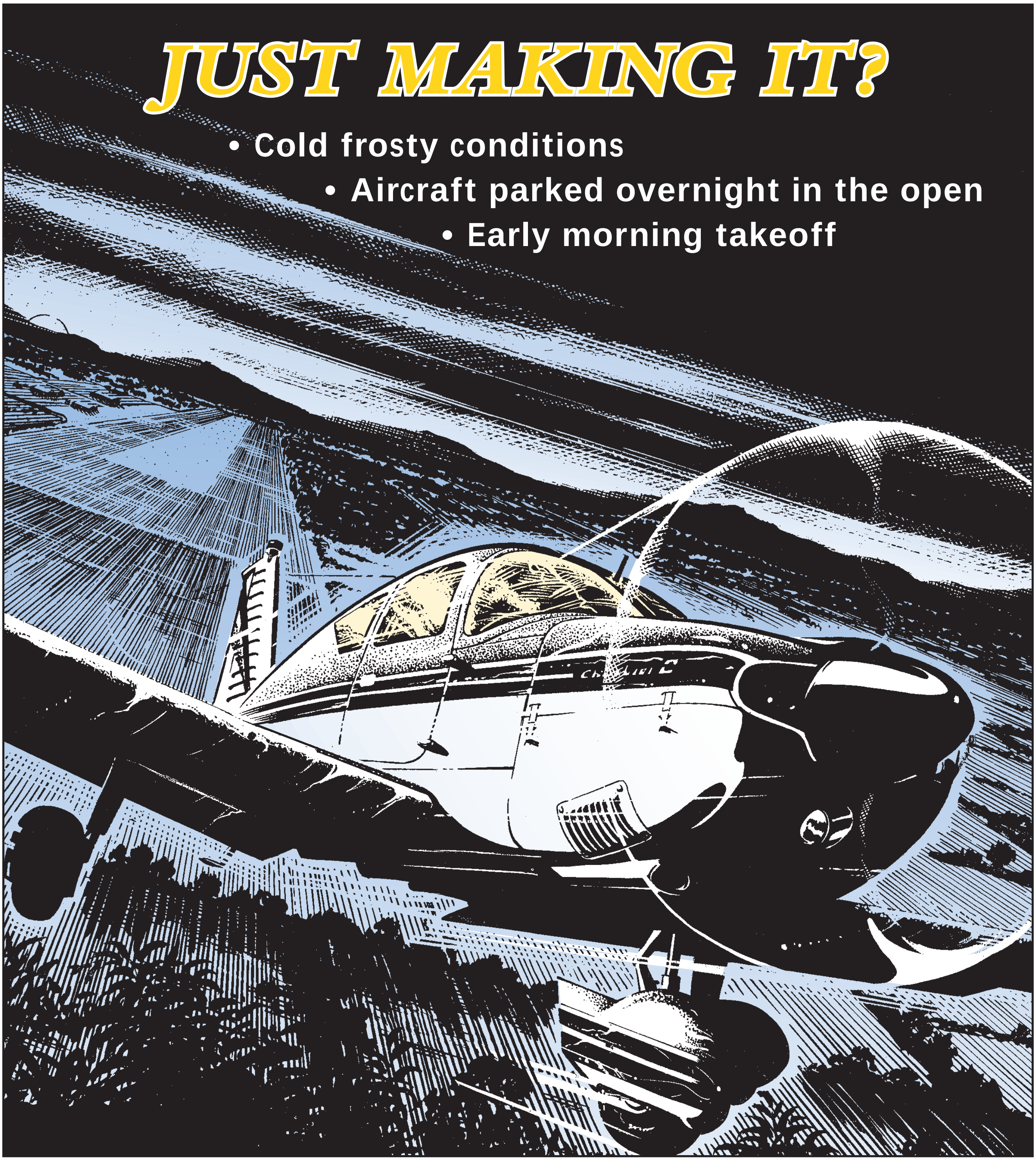
If you have just flown an aircraft which has developed a mechanical problem (eg. a lower-than-normal oil pressure reading), then it is your responsibility, as pilot-in-command, to ensure that the nature of the defect is entered in the ‘Maintenance Arising’ panel along with the date and your initials. This way another unsuspecting pilot (who has no way of detecting the problem during their pre-flight) will not attempt to fly the defective aircraft. This pilot-in-command responsibility is no different to that of checking the Inspections Due’ and ‘Maintenance Due’ panels before flying an aircraft.

Retention of Tech Logs

Tech logs form a part of an aircraft’s maintenance records and must therefore be retained for a specific period of time under the Civil Aviation Rules. Rule 91.631 *Retention of records* requires that tech logs be retained “…until the work is repeated or superseded by other work of equivalent scope and detail, or for two years after the work is performed, whichever occurs first…”. Rule 91.631 also requires that all current maintenance logs be kept for six months after the aircraft has been withdrawn from service.

As each tech log is filled up, the hours flown are normally transferred to the aircraft logbook and the tech log retained (often in the aircraft logbook itself) as part of that aircraft’s maintenance record.

Tech logs may, however, be discarded provided that their contents can be completely transferred to the aircraft logbook and signed for by the same LAME who carried out the maintenance in the first place. This is sometimes not possible as the LAME performing the maintenance may not always have access to the aircraft logbook. ■



AN AIRCRAFT WITH ICE ON ITS WINGS WILL:

• Require a higher takeoff speed
• Use more takeoff distance • Have reduced obstacle clearance capability

Don't chance it — remove it!

Publications

0800 800 359 — Publishing Solutions, *for CA Rules and ACs, Part 39 Airworthiness Directives, CAA (saleable) Forms, and CAA Logbooks. Limited stocks of still-current AIC-AIRs, and AIC-GENs are also available. Also, paid subscriptions to Vector and Civil Aircraft Register.*

CAA Web Site, http://www.caa.govt.nz *for CA Rules, ACs and Airworthiness Directives.*
0800 500 045 — Aviation Publishing, *for AIP documents, including Planning Manual, IFG, VFG, SPFG, VTCs, and other maps and charts.*

Accident Notification

24-hour 7-day toll-free telephone

0508 ACCIDENT
(0508 222 433)

CAA Act requires notification "as soon as practicable".