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POINTING TO SAFER AVIATION

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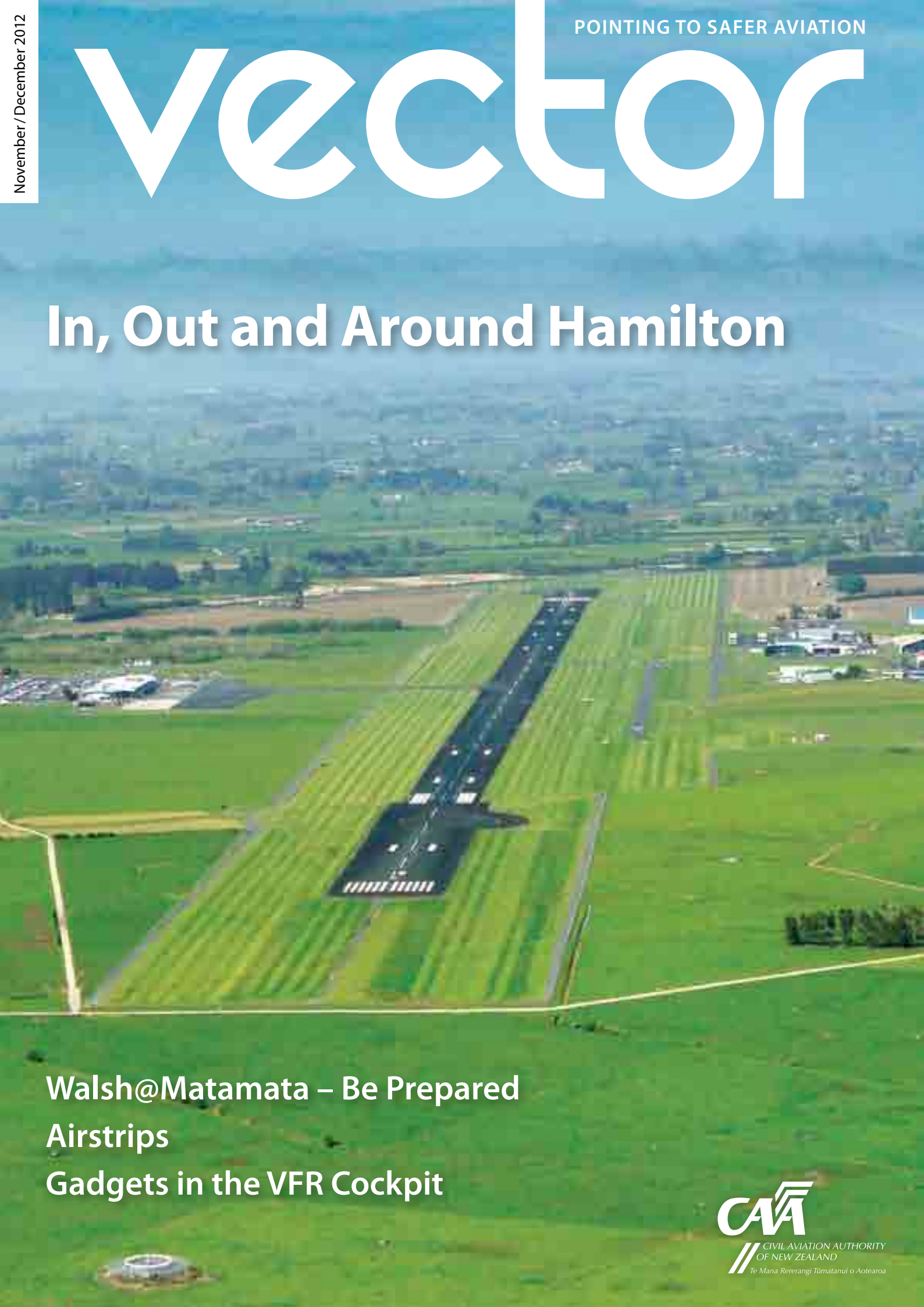
In, Out and Around Hamilton



Walsh@Matamata – Be Prepared

Airstrips

Gadgets in the VFR Cockpit

CAA
CIVIL AVIATION AUTHORITY
OF NEW ZEALAND
Te Mana Rererangi Tūmatanui o Aotearoa

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In this issue...

In, Out and Around Hamilton

Navigating to Hamilton under VFR can present some interesting challenges. We give some useful tips on finding the aerodrome while avoiding potential airspace busts.

Walsh@Matamata – Be Prepared

The annual Walsh Memorial Scout Flying School is under way again in January, with intensive activity at and around Matamata Aerodrome. Careful planning is recommended for visiting and transiting pilots.

Airstrips

Operating safely at airstrips can be challenging, so you need to make sure you get it right to arrive and depart safely. We give some pointers on safe operations and take a look into two recent accidents.

Gadgets in the VFR Cockpit

Those electronic gadgets can be great aids for navigating and managing your flight, but there is a downside that can hinder safe flight.

Cover photo: Hamilton International Airport, looking south along Runway 18, with the terminal to the left and the GA and maintenance area to the right.

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In, Out and Around **Hamilton**

Hamilton Aerodrome is a major centre for a wide variety of aviation activity. Apart from the usual scheduled airline traffic, there is a great deal of training activity at and around the aerodrome, and lots of traffic associated with general aviation and airline operating and maintenance bases on the field.

For the first-time visitor to Hamilton, the traffic mix and intensity can be intimidating, but this can be mitigated by diligent preflight planning, including seeking advice from local operators and Hamilton Tower where necessary. For anybody unfamiliar with the area, actually finding the aerodrome can sometimes present a challenge, as can identifying airspace boundaries. GPS can be particularly useful, but as discussed in a separate article (see page 17), should not take precedence over a good lookout.

Airspace

The Hamilton Control Zone Class D (CTR/D) is basically a rectangle with rounded ends, the ends being 10-NM DME arcs, and the long sides aligned with the main runway direction, 18/36. It extends from the surface to 2500 feet, and is overlaid by a Class D control area (CTA/D) extending from 2500 to 9500 feet. There is a CTA step to 4500 feet beyond the boundary of the 2500-foot CTA lower limit. The CTA boundaries are irregular, so care in map reading is required when climbing or descending, in order to remain clear of the CTA steps.

Hamilton aerodrome, with Rukuhia in the foreground and Mystery Creek just beyond.
Photo courtesy of Gordon Malcolm/Waikato Aero Club

St Peters school in the foreground, with Mystery Creek and the aerodrome in the distance. This photo was taken on the same late afternoon flight as the one on page 3. Note the difference in the lighting between the two. Photos courtesy of Gordon Malcolm/Waikato Aero Club

Hamilton Tower, primary frequency 122.9 MHz, is on watch daily from early morning to late evening, with ATIS available on 128.6 during the tower hours of service. Christchurch Information is available on 118.5 MHz outside the CTR (refer to *AIP New Zealand* Vol 1, Figure GEN 3.4-2, for coverage). The Tower controllers are only too pleased to help with preflight advice – it may save you and them from later confusion.

CTR Sectors

The most obvious CTR Sector on the VFR arrival and departure procedures charts in *AIP New Zealand* Vol 4, and VNCs C3 and C6, is the Instrument Sector, a bow-tie shape with its 'knot' between Rukuhia and Mystery Creek, diverging out to the north and south ends of the CTR. This is designed to contain IFR approaches and departures, and can be busy at times with airline traffic and instrument training traffic. Outside the Instrument Sector, the CTR is divided into four further sectors, City, Pirongia, Swamp, and Scott, all between 1700 and 2500 feet. The two waypoints TAYLA and BUDEN, shown on the VFR arrival and departure charts, relate to the VOR and GNSS approaches to Runways 18 and 36 respectively.

Transit Lanes

There are two VFR transit lanes within the CTR boundaries, T251 (Northern) and T252 (Southern), both surface to 1000 feet. The shape of T251 is irregular, and the two easternmost defining points require careful map reading to distinguish. Note that T251 covers a fair portion of Hamilton city, and operating at the upper limit of 1000 feet does not comply with the rule 91.311 minimum height requirement over a congested area. T251 is used often by light aircraft traffic transiting to and from Te Kowhai aerodrome to the northwest of Te Rapa.

Traffic using T252 will find that Lake Ngaroto, at 5 NM from the aerodrome, is a useful reference point – remaining to the south of it will keep you within the transit lane.

Visual Reporting Points (VRPs)

There are 18 of these shown on the VFR arrival and departures pages, and several more in the general area, depicted on the C-series VNCs. It will help Tower and other traffic if, when reporting position, you describe your position in relation to a published VRP. When you are issued with a clearance into the Hamilton CTR, it may be in plain language via the route requested, or it may be via either the Rukuhia or Mystery Creek arrival, particularly in times of heavy traffic. Both of these arrivals include an altitude band of 1700 to 2500 feet and a requirement to report when 2 NM from the relevant VRP. Either joining or holding instructions can be expected from there.

Rukuhia

Rukuhia, only 1.5 NM to the west of the aerodrome, can be difficult to see on a good day, let alone when the visibility is restricted for any reason. It is the intersection of Highway 3 and Rukuhia Road, unremarkable except for a cluster of mainly residential buildings, but a large, light-coloured fruit-packing complex some 500 m to the north is a useful location aid, visible from much further west than the actual reporting point.

Mystery Creek

From the south and southeast, Mystery Creek can be hard to spot until almost on it, as it is not only below aerodrome elevation, but the 'lip' of the river terrace is lined with trees, further obscuring it. Although its Fieldays® infrastructure, and the golf course immediately to the north are distinctive, it can still be hard to see from the east and northeast in a low afternoon sun, particularly when there is haze present.

Other VRPs in the area should be readily identifiable from their names (eg, Cambridge, Showgrounds, Te Awamutu) and others are generally associated with a prominent feature (eg, Temple View – distinctive church; Te Rapa – racecourse; Horotiu – meat works; Hautapu – dairy factory). Some new VRPs were added during 2012 at the suggestion of the local user group, and feature on the November 2012 VNCs. These include Scotsmans Valley to the northeast of the CTR, St Peters School on the CTR boundary between Cambridge and Mystery Creek, and Ngahinapouri, just outside the CTR to the southwest of Rukuhia.

Navigating to HN

From the North

If you are cleared for the Rukuhia Arrival, and this will be via the City Sector, a useful reference is the North Island Main Trunk railway, which you can intercept about Te Rapa and follow south. It will lead you close to Rukuhia – very useful in reduced visibility conditions. Note that the railway branches to the northeast just north of Hamilton Lake, then crosses the Waikato River, which should be an immediate clue that you've taken a wrong turn. If clearance into the CTR is not immediately available, you can track outside the CTR boundary from Te Rapa towards Temple View, from where is only 5 NM to Rukuhia.

If entering from the Gordonton area, and you have been cleared for a Rukuhia arrival, take care not to infringe the Instrument Sector, which is very close to the direct track from Gordonton.

From the Northeast

This area presents some challenges, as there are very few distinct landmarks to aid identification of the CTR boundary, apart from a large piggery at Motomaoho just outside the zone. A suggested arrival route is to intercept the major powerline that runs between Whakamaru and southeastern Auckland and passes just to the west of Morrinsville, and follow it to the head of Scotsmans Valley. From there, flying the centreline of the valley has you pointing almost directly at the aerodrome. Should clearance not be immediately available, you can track clear of the CTR to Hautapu and if necessary, St Peters School.

The powerline mentioned is distinctive, with towers much larger than those on the lines that it parallels as far south as Orini before diverging to the east. It crosses another line about two miles south of Morrinsville, and the differences are readily apparent at that point. The line can also be a useful reference for transiting traffic wanting to remain clear of the CTR.

The Whakamaru to Brownhill Road powerline, with Mt Ruru on the skyline. Scotsmans Valley is off to the right. Photo courtesy of Gordon Malcolm/Waikato Aero Club

From the South or Southeast

As mentioned earlier, Mystery Creek can be difficult to see from this sector, so tracking via St Peters School may make for easier navigation. If cleared for a Mystery Creek arrival from Kihikihi VRP, note that the direct track infringes the Instrument Sector, so an eastward displacement of track will be necessary.

From St Peters School, just west of Cambridge, the Waikato River leads you to Mystery Creek, on its left bank. Look for the large central building and the surrounding extensive exhibit areas laid out on the ground.

Horotiu (meat works) in foreground, not to be confused with the Te Rapa dairy factory (arrowed). The road under construction is the new Auckland expressway extension.

From the South, Southwest or West

A similar situation exists in the case of a Rukuhia arrival clearance from Pirongia – a westerly displacement of track is needed to avoid the Instrument Sector. If a clearance is not available, you can track clear of the CTR towards Ngahinapouri, pending clearance. Do not follow the road between Pirongia and Ngahinapouri, as it will lead you into the CTR.

The Rukuhia arrival from the west (Temple View or Ngahinapouri) should be reasonably straightforward, especially if you can identify the landmark packing sheds just to the north of Rukuhia. Don't forget your two-mile call.

Conclusion

As is usual when flight planning, ensure that you have the latest aeronautical information, including charts, at your disposal. Again, do not be afraid to seek advice from local sources – the local operators and ATC are pleased to be able to help. Speaking of whom, *Vector* gratefully acknowledges the willing assistance of Roger Cruickshank (Waikato Aero Club) and Megan Thomas (Airways) in the preparation of this article. ■

Looking down Scotsmans Valley in the general direction of the aerodrome (arrowed).

PBN Developments

The November 2012, AIP and chart amendments featured some major changes to the New Zealand domestic IFR route structure, as part of the NZ PBN (performance-based navigation) rollout. Four VORs have been decommissioned, resulting in a large number of route changes, and all RNAV (area navigation) routes are now designated RNAV 2. Additionally, new RNAV departure and arrival procedures have been introduced at Queenstown and Invercargill.

But what does this all mean? For the uninitiated and for the aspiring IFR pilot, some explanation is necessary. RNAV is, "a method of navigation which permits aircraft operation on any desired flight path within the coverage of ground-based or space-based navigation aids or within the limits of the capability of self-contained aids, or a combination of these."

Modern RNAV is mainly based on GNSS (global navigation satellite system) equipment, although inertial navigation systems and DME/DME sensors are also used. It permits point-to-point navigation without the need to track over or between ground-based navigational aids, and makes for more efficient use of aircraft, airspace, and ATS (air traffic services) routes.

The move to performance-based navigation adds a navigation specification to RNAV, for aircraft operating on ATS routes, instrument approach procedures, or in designated airspace. The performance requirement is expressed either as an RNP (required navigation performance) specification or an RNAV specification, each with a number (of nautical miles), eg, RNP 1 or RNAV 2. The navigation specification is a set of aircraft and flight crew requirements that must be met before operating approval can be obtained. The significance of the number for aircraft operating under an RNP or RNAV approval, is the degree of accuracy to which the flight path must be flown – in simple terms, the lower the number, the higher the accuracy.

An RNP specification includes a requirement for onboard flight path accuracy monitoring and alerting, but this requirement does not apply to an RNAV specification. An RNAV 1 or an RNP 1 specification requires ±1 NM lateral navigation accuracy (total system error), and this is expected to be achieved at least 95 per cent of the time by the population of aircraft operating within the airspace, route or procedure. In the approach case, the more stringent the RNP specification, the lower the minima that can be achieved. For example, the Queenstown RNAV (RNP) Y approach for Runway 05 has three RNP specifications, the lowest of which (RNP 0.15) allows a minimum descent altitude of 1438 feet (278 above threshold), as compared to 2229 feet (1069 above threshold) for RNP 0.3.

There is still a network of conventional routes available to IFR users still reliant on ground-based aids. These are designated on the enroute and area charts by the prefixes H (2-way), V (1-way), and W in the case of uncharted routes (listed in *AIP New Zealand* Vol 2, Table ENR 3.2-2). RNAV 2 route designators are prefixed Q (2-way), Y (1-way), and Z (uncharted). You will also see route designator prefixes L, M, N, P (RNAV routes) and A, B, G, R (non-RNAV routes) which indicate international routes.

There is a lot of information to assimilate, and recommended further reading is Advisory Circular AC91-21 *RNAV (etc) – Operational Approvals*; AIP Supplements 136/12, 158/12, and 164 to 167/12; *AIP New Zealand* ENR 3.2, and to put everything in context, the *PBN Implementation Plan – New Zealand*, which is available on the CAA web site, www.caa.govt.nz, "Performance-Based Navigation". ■

Piston **Engine Care**

You don't need to be a mechanical genius to know when something doesn't seem quite right with your engine.

Lycoming O-320 engine.
Photo courtesy of Lycoming Engines.

There are some 'evergreens' that operators and engineers have seen over the years with piston engines, so by being alert to any tell-tale signs of trouble, you can head off problems in a timely way before anything major develops.

Bob Jelley, an experienced aircraft maintenance engineer and CAA Safety Adviser, says the 'evergreens' can be many and varied and that it makes good safety sense to be alert to any warning signs of impending trouble, with early intervention being paramount to the health of an engine.

"By the time your engine needs a fault rectified, it may have already been flagging a warning by a change in its normal operation. There are a range of symptoms of trouble that piston engines can exhibit, from being a bit difficult to start, to a condition that might signal an impending failure. You are also more likely to notice any symptoms between scheduled inspections, when the aircraft is not immediately handy to a maintenance provider.

"Any symptoms and signs of trouble should, nevertheless, always be discussed promptly with a maintenance provider for assessment and possible rectification. Maintenance providers have the experience and technical data necessary to troubleshoot, using the given symptoms," Bob says.

Let's take a look at some of the more common ones, remembering that this list is not exhaustive.

Starting Difficulties

Engine starting difficulties will usually show up first when colder temperatures kick in, and may occur for a number of reasons, as illustrated in the following points.

To achieve combustion, fuel must be able to atomise and mix with the air. In cold temperatures, atomisation is harder to attain and carburettor engines equipped solely with accelerator pumps can be difficult to start, especially engines with large capacity updraft carburettors. Most carburettor engines have priming nozzles that should be checked periodically, because they can get blocked.

Also, the magneto impulse coupling could be faulty, or if the engine has a 'shower of sparks' system, its timing may be out, so check these periodically for correct operation. How the engine responds during the low starting-up revolutions, and how well the engine picks up after the first cylinders fire, is influenced by the strength of the magneto magnets and the magneto internal timing, and its timing to the engine.

Non-normal Idle Indications

Normally, the engine idle speed should rise between 10 and 50 rpm when the mixture control is moved to its cut-off position. With a manifold pressure gauge, there should be a drop of half to one inch before rising again as the engine shuts down.

A higher than usual idle speed, with no rise when the mixture is cut, may be caused by a leaky inlet gasket or a leak in another section of the induction system. If so, your engine could have a localized lean-running cylinder.

Don't just compensate by adjusting the idle speed or the mixture; determine the cause of the anomaly and rectify it. For injected engines, make sure the fuel pressures are regularly checked at the recommended periods and adjusted in accordance with the manufacturer's specifications, using calibrated equipment.

Magneto RPM Drop

The major engine manufacturers say that the maximum engine drop-off speed when testing magnetos shouldn't exceed 175 rpm, and shouldn't vary by more than 50 rpm. Bob's experience is that the normal drop range is between a low of around 50 and a high of 120 rpm, and that generally maintenance providers would be looking for reasons well before the published limits were reached.

"Any symptoms and signs of trouble should always be discussed promptly with a maintenance provider."

Low Idle Oil Pressure

At idle, at the normal operating temperature, know what the engine oil pressure range should be. Even though the manufacturer may give a wide range, the usual figure for an engine model and aircraft installation should pretty much be always the same. Reducing oil pressure could be indicative of something as straightforward as a contaminated relief valve, or something more serious, such as excessive engine bearing clearances, oil filter contamination, or a damaged oil pump.

In one case of low idle oil pressure in a helicopter engine, it was examined and found to be close to complete failure.

Excessive Oil Consumption

Engine manufacturers usually give a maximum oil consumption rate for their engines, and recommend monitoring the oil consumption and rectifying the causes when there is excessive oil use.

Engines should not consume oil at a level near their maximum rate unless they are close to their recommended time-before-overhaul period. High oil consumption can result from unsatisfactory engine break-in, or excessive engine component wear, and it is important to deal with it sooner rather than later. De-rated helicopter engines can be susceptible to inadequate break-in, and extended high altitude ferry flights with new engines is a common reason for a high oil consumption rate.

Oil Leakage

Oil leakage might indicate a minor defect, such as a weeping rocker cover gasket or pushrod shroud tube seals, but it could also signal more serious problems. These could include a cracked oil cooler core, leaking or cracked plumbing, leaking seals, broken crankcase cylinder studs or through bolts, or even a cracked crankcase. Identify the source of the leakage and have it promptly rectified.

Sticking Valves

A correctly timed sequence of valve opening and closing is essential for proper engine operation. Any sticking between the valve stem and its guide can restrict the efficient opening and closing of the valve, and affect the operation of the engine.

Any hesitation, or 'miss' in engine speed, can indicate a sticking valve. When an engine runs with a rhythm that suggests a cylinder is not operating, it can be a precursor to a stuck valve. The first indication of a sticking valve is often immediately after engine start-up, which some refer to as 'morning sickness'. Shut down the engine and have your maintenance provider take a look.

Some engines are more susceptible to valve sticking than others, so talk to your maintenance provider to learn more about this. The web site, www.sacskyranch.com, has information about sticking valves.

Carburettor Heating

In a recent example, a collector scoop detached from an engine exhaust system, limiting the amount of warm air available for the carburettor. The carburettor subsequently iced up and the aircraft was involved in an accident.

Carburettor heat collectors, air-box valves, associated ducting, and shrouds, are subject to wear and vibration. Any failure could lead to a reduction in air volume and temperature, preventing the engine from effectively combating icing.

Know the standard rpm drop when applying carburettor heat. If the drop is less than normal, get your maintenance provider to check the system. The drop can vary between aircraft brands, even with the same engine, so understand what the norm is for your particular aircraft.

Vibrations, Noises, Squeals or Rattles

If you feel a change in cockpit vibrations, or hear new noises, let your maintenance provider know. These could signal a range of problems, such as a cracked exhaust valve riser, a defective hydraulic lifter, a seizure or failure of an alternator bearing, or cowling contact with a part of the engine. ■

Pay **Online**

The Medical Certificate Application fee of $313 (including GST) was implemented on 1 November 2012. The fee is required to be paid at the time of application and before a medical examination takes place.

The CAA has launched an online payment portal that allows you to pay the fee by credit card (Visa or MasterCard), or by online banking. The payment is processed by secure third parties, so the CAA does not see or store your private banking details.

To complete a payment, you will need to provide your full name, a valid email address, valid payment details and your CAA Participant Identification Number, if you have one. You can also select a Medical Examiner from the CAA-approved list.

Once payment is completed, you will receive an email notifying you of the CAA receipt number. You will need to print this email and present it as proof of payment to your Medical Examiner. Email confirmations will also be sent to the CAA Medical Unit and a Medical Examiner if chosen.

The online payment portal is a quick and efficient way of paying the fee. There is some guidance on how to use the portal as you go through the payment process.

The CAA will still process manual payments, but confirmations will take longer than if payment is made online, so you will need to plan carefully to ensure confirmation is received before the date of your examination. ■

The portal is on the CAA web site:

www.caa.govt.nz/payment

Part 61 NPRM **Open for Submissions**

The NPRM (09-02) on stage 2 of the Part 61 *Pilot Licences and Ratings* re-write, opened on 29 November 2012 for submissions.

This is an opportunity to have a say in shaping the future of pilot licensing and ratings. It is important that you make a submission that indicates the portions of the NPRM that you **support** and the areas in which **changes** may be required. Feedback on changes is most effective when a suitable alternative is suggested for consideration.

Some of the changes proposed include: introduction of two new pilot licences – PPL (Balloon) and CPL (Microlight), reorganising the system of ratings and authorisations, and amending and clarifying flight test requirements.

The NPRM is available on the CAA web site, www.caa.govt.nz, "Rules Development – Notices of Proposed Rulemaking (NPRMs) Open for Submissions".

These amendments are designed to enhance aviation safety, raise pilot training and competency standards, clarify rule requirements, and ensure continuing compliance with ICAO standards.

The NPRM has been developed from the work of the Part 61 Technical Study Group and the CAA Personnel and Flight Training Unit, and after discussions with the aviation community.

Please use the NPRM Submission Form available on our web site, and email it to docket@caa.govt.nz. The CAA prefers to receive submissions by email in MS Word format to make it easier to collate all comments.

The closing date for submissions is 11 January 2013.

For further information, or assistance in submitting your comments, please contact Aviation Standards Specialist, Michael Shouse, michael.shouse@caa.govt.nz ■

Walsh@Matamata – Be Prepared

Photo courtesy of Scouts New Zealand

The 47th annual Walsh Memorial Scout Flying School will be held at Matamata Aerodrome from 8 to 22 January 2013, and the aerodrome and surrounds will be **busy – busy – busy**. Pilots contemplating venturing into Matamata or the local area need to apply the original Scout motto **'Be Prepared'**. In other words, read your NOTAMs and AIP Supplements.

Because of the intensive training activity involving up to 20 aircraft at once, the Matamata mandatory broadcast zone (MBZ) becomes a control zone (CTR) for the duration, with temporary aerodrome control, callsign 'Matamata Tower', based on the aerodrome. The CTR is a circle of three miles radius, centred on the aerodrome, extending from the surface to 3500 feet. Tower hours of service will be from 0600 hours NZDT to last light on each day of the camp (shorter hours on the first and last days), the zone reverting to MBZ status when the tower is off watch.

Tower primary frequency is 118.9 MHz, and secondary 120.0 MHz, which also happens to be the MBZ frequency. ATIS will be available on 127.6 MHz, and will broadcast an 'off-watch' message when the tower is unattended. The tower controllers are regular participants in the annual Walsh camp, and are ready and willing to help pilots intending to visit or transit via Matamata. Visitors to the tower are welcome at any time, and pilots are encouraged to telephone if they have any questions or require advice before departing for Matamata.

Not only will there be intensive activity within the CTR, there will also be considerable traffic within a 10-mile radius of the aerodrome, undertaking off-circuit training. The flying school aircraft numbers will be augmented from time to time by visiting aircraft of special interest to the students, and these will include warbirds, helicopters and military aircraft (large and small). Traffic in the training areas will normally maintain a listening watch on the tower frequency, so any pilot intending to go anywhere within or close to a 10-mile radius of Matamata, should listen out similarly, broadcasting position and intentions if appropriate.

In the past, a cause of concern to controllers and pilots alike has been the number of unannounced, uncleared, unprepared pilots arriving without even having bothered to stick to the MBZ procedures, let alone talk to the tower. A particularly bad aspect is that some of these pilots were instructors on dual training flights. Worse still has been the occasional transiting pilot ploughing through the circuit (at circuit height!), blithely unaware of the cloud of light aircraft in the vicinity. As the intro says – BE PREPARED!

The 2012 camp featured an unexpected arrival of several non-local gliders, which the tower controllers were able to work around, after the initial surprise. A short time later, a similar number of vehicles with glider trailers in tow charged onto the manoeuvring area, seemingly unaware that something big was going on at the aerodrome. "But we always do this," was one comment. Yes, well…

AIP Supplements are free to download from the AIP web site, www.aip.net.nz. ■

Airstrips

Operations at an airstrip involve many factors that are different from a long sealed runway. But with the right mentoring and flight instruction, you can develop and grow your experience for on-going safe operations in all facets of your flying, including airstrip operations.

Disturbingly, there are examples of unsupervised (mostly private) low-time pilots coming to grief at airstrips by not applying or knowing about safe operating practices. This article looks at two recent accidents at non-published private airstrips, and gives some tips and insights for safe airstrip operations.

Some Accidents

In one case, a pilot lost control of his Cessna 172 at low level during a go-around, when he allowed the airspeed to get too low.

The pilot was familiar with the 500-metre airstrip, having landed there a number of times before. The pilot did a run along the length of the airstrip at low level to clear some stock, and then flew a reverse turn to position for a landing in the opposite direction.

The airstrip was situated in the lee of some nearby hills, and with a crosswind of about 15 knots there was turbulence and probably wind shear over the airstrip. The aeroplane was operating near its maximum all-up weight, and its maximum demonstrated crosswind was 15 knots.

The aeroplane touched down with reduced flap about halfway down the mostly level airstrip, at what appeared to be a high groundspeed. A slight tailwind may have been present for the landing. A short time after touchdown the pilot applied power for a go-around and retracted the flap. The aeroplane stalled soon afterwards, and the pilot was unable to regain control before it struck the ground in a nose-down attitude, killing the pilot and seriously injuring the two passengers.

In another case, a Cessna 172 with three adults on board landed long and ended up in a ditch at the end of the 570-metre private airstrip. The occupants all received serious injuries, and the aeroplane was substantially damaged.

The pilot had not landed at the airstrip before but did get a prior briefing from the owner. The airstrip was level and equipped with a windsock. Several other aeroplanes were in the circuit when the pilot arrived, which he said distracted him. He did an overhead join, but didn't position the aircraft correctly to observe the whole airstrip or notice the ditch at the end of the airstrip, even though the owner had told him about it.

The pilot said he thought the airstrip looked longer than it was. He used full flap for the landing, and believed the wind may have shifted during the final approach and that he could have encountered a tail wind component, which increased his groundspeed.

Reminders

These examples serve as reminders to pilots that they need to get it right when operating into airstrips, to have a good understanding of all the requirements for safe operations and the necessary hands-on skills. In both examples, the airstrips were not unduly short and were within the landing capabilities of each aeroplane.

"Before operating at any airstrip, pilots should have specialised flight instruction, or refresher, training..."

Carlton Campbell, an A-category flight instructor and flight examiner and CAA Standards Development and Training Officer, says that safe airstrip operations require prudent planning, the right skills and the use of the right aircraft.

"Pilots, especially private aircraft owners, who meet the basic licence requirements and aren't supervised, can operate into private airstrips having never operated on anything other than a long hard runway before. This can be a recipe for disaster. Their licence training may not have provided them with the specific instruction needed for airstrip operations, or exposed them to the many factors they need to consider for these operations," Carlton says.

The following are some examples of the understanding and abilities that pilots need to operate safely at any airstrip.

- Airstrip conditions – slope, width, variable and seasonal surface conditions, obstacles, landing and takeoff distance, whether it's one-way.
- Aircraft performance – the ability to land and take off safely at the intended operating weight, at the density altitude. Understanding that aircraft condition (age, prop condition, etc) can reduce its performance.
- Sloping airstrips – optical illusions, flying the right approach, escape options.
- Approach and go-around paths – clear and obstacle-free, or do 'dog legs' have to be flown?
- Landing decision point – choosing one, doing final wind checks, at the right speed on profile for the landing aiming point, the discipline to go-around if you're not correctly set up, and to continue once the committal point is passed.
- Aircraft configuration, power, speed control – powered approaches at 1.3 times the stalling speed in the landing configuration are usually best, depending on the wind. Don't aggregate speed increments for each contingency. Understand flap use and what settings are best, use correct takeoff rotate speeds, during climb out or go-around whether to use the best rate or best angle of climb speed.
- Takeoff decision point – know that point, know why and when to reject a takeoff and what action to take.
- Environmental conditions – the prevailing wind, how to manage the difficulties the surrounding topography can pose, such as wind shear (have a margin), turbulence, sun and shadow effect, or optical illusions.

Preparation

"Before operating at any airstrip, pilots should have specialised flight instruction, or refresher training, in short field operations at actual airstrips. In doing so, pilots will develop the skills, experience and confidence they need to operate safely and to avoid becoming another statistic. Remember though, that training on one day will not necessarily prepare pilots for the potential conditions of another day, or a different season," Carlton advises.

Protocols

Before using an airstrip you need the permission of the owner, and must comply with any conditions or limitations of use. Open communication should be maintained so that any safety issues or operating restrictions can be discussed in advance.

The Rules

Rule 91.127 (a) *Use of aerodromes*, says no person may use any place as an aerodrome unless that place is suitable for the purpose of taking off or landing of the aircraft concerned.

Further Reading

Takeoff and Landing Performance GAP booklet – email info@caa.govt.nz for a free copy, or go to www.caa.govt.nz, "Publications". ■

Waiheke Island

Be safe out there this summer. Waiheke Island can be a popular summertime destination for recreational pilots intent on getting some flying experience and having a good time.

However, the airfield can challenge the unwary or low-time pilot, because there are some interesting operational idiosyncrasies, some tricks to be aware of, and some protocols to follow when operating there.

Test pilot, Roger Shepherd, has operated his Cessna 182 at Waiheke Island, and says it can be a deceptively tricky airfield to land on, but that it doesn't give this impression from the air.

"Flying the 45 degree offset approach to Runway 17 looks straightforward on the *AIP New Zealand* arrival procedures chart, but it is more difficult than it looks. There can be a tendency to drift right on the offset to align with the runway prematurely, and thus encroach into the noise-abatement zone. To avoid the zone, a turn at about 50 feet is required to line up for the landing, which can be a bit daunting the first time.

"For landing, the preferred approach is to Runway 35 from the south, which is more straightforward. This depends on the conditions, but a light tailwind is acceptable because there is plenty of room to stop, and an upslope aids braking. Beware though, there is a hill to overfly on short final that looks close. This can create an optical illusion and lead pilots to get high on the approach, miss their aiming point, and land long," Roger advises.

Operations and Protocols

Jolon Marshall, the Waiheke Airfield Manager, stresses the importance of pilots always getting an up-to-date and thorough briefing from him on the airfield conditions and procedures before operating there. He says that this is not only highly recommended, but

On short final approach for Runway 17. Photo courtesy of Betty Shepherd.

also compulsory, and that pilots should not rely on only reading *Vector,* or similar publications.

Jolon also recommends that low-time or first-time pilots flying to Waiheke Island arrange a familiarisation flight with an instructor, and to also remember that touch-and-go landings are prohibited.

Waiheke (NZKE) is published in *AIP New Zealand*, Vol 4. The privately owned non-certificated aerodrome is situated on a ridge two miles east of Ostend, and has an elevation of 445 feet. The two grass runways, 17 and 35, are each 655 metres long for takeoff and landing. Runway 17 has a two per cent downslope, and Runway 35 has a two per cent upslope.

Although parachuting operations have previously been carried out there, they were not being conducted at the time of this article.

The AIP says that the aerodrome is available for general use, but only with permission and a briefing from the operator. Landing fees apply. Severe turbulence can be encountered on short final for Runway 35 in easterly winds, and severe windshear can be encountered on short final for Runway 17 in strong south-west winds.

The preferred arrival and departure is from and to the south of the aerodrome to avoid overflying the residential area and infringing the noise-abatement zone to the north of the aerodrome. If Runway 17 needs to be used for landing, or Runway 35 for departure, then the 45 degree offset approach and departure path must be followed accurately. Remember, any early alignment with the Runway 17 centreline during final approach to land will take you into the noise-abatement zone, which is to be avoided.

Caution

Jolon cautions, "The south-west winds can cause significant windshear on short final for Runway 17, and can even catch out the most experienced pilots. Pilots need to set their own personal limits given their experience, the aircraft performance, and their recent experience into the airfield.

"After heavy rain, the airfield can also become quite soft in patches, especially on the sides, which can adversely affect braking performance. Staying in the centre of the runway is therefore recommended."

Roger says that turbulence and windshear can be encountered late on approach to Runway 17 even in light easterly winds less than 10 knots, "around the area when you would start the turn to align with the vector."

"Pilots need to be prepared to make quite large power changes to properly manage the up and downdraughts and windshear that can be encountered. Getting a thorough briefing (and permission) from the operator beforehand is also really important," says Roger.

Further Reference

AIP New Zealand, Vol 4, AD.

AIP Supplements and NOTAMS.

Visual Navigation Chart C3: *Auckland*

"About Waiheke Island", January/February 2012 *Vector.* CAA web site, www.caa.govt.nz, "Publications – Vector". ■

Airworthiness Directive Changes

The CAA no longer issues New Zealand Airworthiness Directives (ADs) by rewriting the text of the State of Design ADs.

NZ AD Schedules on the CAA web site will be updated every month by adding the State of Design AD number, title, and the effective date at the end of the existing NZ AD schedule. The front page of every AD schedule will contain the AD Schedule applicability, the aircraft type and the National Aviation Authority (NAA) responsible for continuing airworthiness. All relevant State of Design components and equipment ADs will be listed in the existing component and equipment New Zealand AD schedules.

CAA Airworthiness Specialist, Owen Olls, urges anyone with a query about ADs to contact the Aircraft Certification Unit by emailing: airworthinessdirectives@caa.govt.nz.

"The CAA is not publishing the wording of State of Design ADs because these are now readily available on the internet. In the event that an AD is received only on paper, then the CAA would make the AD available on the CAA web site," says Owen.

Where an existing NZ AD is based on a foreign AD, compliance may be shown with either the NZ AD or the equivalent State of Design AD, because they will have essentially the same requirements.

Aircraft Applicability

Aircraft below 5700 kg MCTOW	Operators Must Comply With
Already on the New Zealand register on 1 October 2012.	NZ ADs applicable to the aircraft, engine, propeller, and equipment issued prior to 1 October 2012 and every State of Design AD applicable to the aircraft, engine, propeller and equipment issued or revised on or after 1 October 2012. Note: These will be listed in the NZ AD schedules.
Registered in New Zealand after 1 October 2012, and hasn't been on the New Zealand register before.	
A new aircraft type or variant registered in New Zealand after 1 October 2012.	Every State of Design AD applicable to the aircraft, engine, propeller, and equipment issued before and after 1 October 2012.

New Zealand ADs

All New Zealand ADs issued before 1 October 2012 will remain in effect. If an NAA issues a State of Design AD which supersedes an existing New Zealand AD, the CAA will cancel the superseded NZ AD when the NZ AD schedule is revised at the end of every month, as close as possible to the effective date of the State of Design AD. The replacement State of Design AD will be added to the New Zealand schedule.

The CAA will not cease to issue New Zealand ADs. This means for any aircraft, including those aircraft not supported by the State of Design, the CAA can issue a NZ AD if an unsafe condition exists in an aircraft or aeronautical product. This AD will have a NZ identifier, eg, "DCA/…" and will be added sequentially to the schedule.

Alternate Means of Compliance (AMOC)

An AMOC provided by the State of Design NAA against a State of Design AD will not be automatically accepted by the CAA, as the CAA needs to assess whether the reasons for the AMOC are still relevant or applicable in New Zealand. For approval of a CAA AMOC based on a foreign AMOC, an applicant must submit form CAA 24039/01 to the CAA.

Notification

Operators subscribed to the CAA email notification service will receive an email notification when an Emergency AD is issued. Relevant aircraft operators will also be mailed written notification and a copy of the Emergency AD.

For more information, see the CAA web site, www.caa.govt.nz, "Airworthiness Directives", and to subscribe, "Email Notification Service". ■

Gadgets in the VFR Cockpit

Technology in the cockpit that enhances safety is to be encouraged, but there is a downside that can actually reduce safety – an unintended outcome.

While Global Positioning Systems (GPS) for navigation, and other portable electronic devices, may be used in VFR operations, there have been instances where over-reliance, sole-use, or other GPS-related issues have been identified as the main contributing factor to safety occurrences, as illustrated in the following cases.

Examples

- A pilot unfamiliar with the local area was preoccupied with navigating using his GPS. He flew through a glider winch-launching area not knowing it was there, and had to take immediate evasive action to avoid colliding with a winch cable that was attached to a glider being launched.
- Both pilots became distracted when one was explaining the functioning of the GPS to the other. They then allowed their aircraft to inadvertently enter controlled airspace and conflict with two aircraft flying instrument approaches.
- After entering a control zone without a clearance, the helicopter pilot landed in a paddock to avoid any conflict with other aircraft. The pilot said he had become uncertain of his position after "losing" his GPS.
- Without a clearance, an aircraft was seen in controlled airspace at 10,000 feet and climbed to 12,600 feet. The pilot said his GPS did not show that he was inside controlled airspace.
- An aircraft entered controlled airspace without a clearance when the pilot, using his GPS, believed that he was well clear of any controlled airspace.

An example of a moving map display and GPS on an iPhone.

Cost reductions, and advances in computing power and sophistication, have made electronic devices like GPS affordable and popular in general aviation for navigation, including light sport and microlight aircraft. Storing and displaying flight manuals and checklists (normal and emergency), getting weather information, and flight planning, are some other examples of uses for portable electronic devices, which can include such things as electronic flight bags, iPads, e-Readers, laptops and cellphones.

Fundamental to safe flying is the maintenance of a clear mental picture of the surrounding terrain and obstacles, the airspace and its limitations or restrictions, and the location of other aircraft. A danger VFR pilots face is that they can be lured into diverting a lot of their attention to the electronic gadgets inside the cockpit, and not maintain an outside lookout. In such cases, pilots can lose situational awareness, and run the risk of inadvertently entering controlled airspace, continuing into areas of bad weather, or worse, colliding with an obstacle or another aircraft.

An unintended human factors issue with the use of electronic navigation (and other) devices under VFR, is that they can lure pilots into over-confidence and a 'head-in-the-cockpit' mentality. Visual flight means you must remain visual with at least the required minimum visibility and stay aware of the world outside the cockpit, including the airspace and terrain, irrespective of the information the devices provide.

Carlton Campbell, an A-category flight instructor and flight examiner, and the CAA Standards Development and Training Officer, says that when he was giving mountain flying instruction, he increasingly found himself having to tell students to forget the GPS and to concentrate on the exercise at hand.

"During the instructional flight, the student's attention was diverted to the GPS display, entering waypoints, and ensuring they could replicate the flight. Students missed the fundamental VFR principle of navigating from outside the aircraft, and missed the training message by being preoccupied with the GPS, and consequently confused the objectives," Carlton says.

While a GPS can significantly assist VFR pilots, it should be used only to supplement visual navigation techniques, not as a primary navigation source. Best practice is to have up-to-date paper aeronautical charts available and open, and to always use them as the primary means of navigation.

"GPS should be used only as a support resource to the primary objective of navigating by external references. Pilots must have their eyes outside the cockpit, keep ahead of the aircraft, and form a mental

An example of an iPad display.

> *Antennas can give poor reception, get disconnected and be subject to interference – so always have a fall-back plan.*

picture of what is coming up. The GPS should be used to support this, not the other way around.

"A fundamental human factor principle says to programme or reset the GPS only during times of reduced workload, and to avoid fiddling with it at pressure points during periods of heavy workload, for example, takeoff, approach, and landing. This includes 'choke points' where the potential to encounter other aircraft activity is high," Carlton cautions.

Some Tips

Carlton has also observed that many GPS users in the VFR environment are self-taught, and are not necessarily proficient in the use of the equipment, but think they are. His advice: "Get some professional help to improve your proficiency levels."

"A popular GPS feature is the 'Direct To' function, but unlike the promulgated route structures, this can take you in a straight line to the destination without considering restricted or controlled airspace, terrain, or other obstacles. To avoid relying on this feature, pre-programme the GPS with accurate flight plan information and waypoints before the flight," Carlton says.

Paul Kearney, also an A-category flight instructor and flight examiner, reiterates that the self-taught option is a very poor way to learn how to use a GPS effectively.

"I find that pilots are prepared to spend hundreds, or even thousands, of dollars on a GPS unit, yet won't pay for a few hours with a GPS-qualified flight instructor to teach them the fundamentals, and how to safely use the units. Frequently, it's the subtle features that pilots don't discover until after they make a mistake, which often has already resulted in a problem, for example an airspace infringement.

"There are also several PC-based software courses or simulators available for most GPS units, which are excellent tools for learning how to use the units long before getting airborne. That way your eyes are outside when flying and not looking for the right button to push, or thinking 'how do I get it to do …?'" Paul adds.

Under VFR, portable electronic devices are non-regulated, so the onus is on the pilot to ensure that their electronic equipment is properly maintained and has accurate up-to-date information. Regularly update the GPS database, and check it against current charts for any airspace changes.

Peter Oberschneider, another A-category flight instructor and flight examiner, comments that pilots need to remember that under VFR their GPS receivers do not meet the same integrity standards as the more expensive IFR equipment.

"In short, the VFR and the handheld GPS receivers can give significant erroneous readings, without warning. I have also seen the units lock up – a problem that when recognised might be too late, and you could find yourself well inside controlled airspace. I agree that the 'Direct To' function is a supplement, which unfortunately is often used as a primary navigation aid by many 'GPS junkies'," Peter cautions.

With respect to portable GPS units, Carlton cautions that, "Batteries can go flat and devices can malfunction. Antennas can give poor reception, get disconnected and be subject to interference – so always have a fall-back plan. Orientate and secure the devices, so they are readily available and readable, and cannot interfere with the flight controls.

"Remember – always plan your flight as a visual navigation flight, allowing for proper tolerances for controlled and restricted airspace. Be thoroughly conversant in the use of the equipment and be aware of any limitations – you don't want to be working this out in-flight.

"A good principle to apply is if the GPS (or other device) failed, you would not find yourself in an unsafe or unwanted situation, and your situational awareness is such that you could safely continue as planned," Carlton adds.

Further Reference

AC 43-14 *Avionics, Installations – Acceptable technical data* Appendix 4, *Installation of En-route GPS Equipment Approved 'For VFR Use Only'* ■

Fuel or **Water?**

The helicopter didn't show any symptoms of engine trouble leading up to the accident – there was no noticeable surging, misfiring, or rough running, before the engine suddenly lost power. After the hard landing, a safety investigation found water present in the fuel lines and determined that the pilot had not sufficiently checked fuel quality before takeoff.

This accident demonstrates the need for pilots to ensure that they have sound fuel management procedures in place, while also understanding the range of different ways that water can enter an aircraft fuel tank.

Fuel Management

Start by checking that the fuel tank cap seals are in good condition. Rainwater frequently enters aircraft fuel tanks through defective seals, so if you notice that the cap does not fit tightly, get the seal replaced. A good idea is also to postpone refuelling the aircraft when it is raining heavily, and use a rag to wipe off water around the cap and filler area.

If you are using a portable fuel source, such as a jerrycan, check a sample from each source before fuelling the aircraft. Truck mounted tanks also need to be checked regularly for water or other contaminants. When checking a sample, ensure you view the fuel through a transparent testing vessel side-on, rather than looking down at it from above.

When you open a fuel cap, always close it before you depart for any reason, even to do a small task such as picking up a dropped item.

Sampling

After refuelling the aircraft, allow the fuel to settle for as long as possible before taking a sample for testing. This will give impurities a chance to settle into the drain sump of each tank.

Learn what the recommended sample sizes are for your aircraft by referring to the aircraft Flight Manual. You should know how many drain points your aircraft has, and drain them daily and after each refuelling. If one of the drain points is blocked by sludge, ice, or other contaminants, or fails to work, get the system checked out by your maintenance provider before flying.

Most importantly, ensure that your sample isn't all water. If in doubt, a smell test can help you determine if it is fuel you are staring at, but be careful when relying on your nose, because water can carry an odour similar to fuel if the two have been in contact.

When water is mixed with Avgas, the presence of water will normally be indicated by small globules sitting on the bottom of the testing vessel. In contrast, detecting suspended water in Jet A-1 can be more difficult as Jet A-1 is clear, giving it a similar appearance to water. When checking Jet A-1, use fuel testing capsules or paste, as these are effective methods for detecting the presence of water. If the Jet A-1 sample has a 'cloudy' appearance, this can indicate that a lot of water is present.

When sampling with reduced natural light, check the sample under bright lighting and against a white background, such as a fuselage. This will make it easier to detect the colour and any debris or contaminants.

If your sample contains contaminants, empty it and keep testing until you get a clean sample. Do not tip the sample back into the aircraft tank, even if it is clean.

After you finish sampling, ensure that each drain valve closes securely afterwards to avoid inadvertent fuel loss.

Trapped Water

Be aware that by draining the sumps, you won't always get all the water out of the fuel tanks. The fuel tanks in some aircraft are lined with rubber bladders, and wrinkles in these bladders can trap water and prevent it from reaching the sump. Also note that in aircraft types that have little or no wing dihedral, the contaminants will tend to spread out more evenly across the bottom of the fuel tank. Similarly, when checking the fuel on anything other than a perfectly flat surface, the drain point may not be the lowest point in the tank. In effect, obtaining a clear fuel sample may not accurately indicate the quality of the fuel throughout the tanks.

In these cases, this undetected water won't reach the fuel lines until shortly after takeoff when a few bumps have shaken it free. To avoid this, gently rock the wings and drain the tank sumps afterwards, and be sure to take fuel samples regularly.

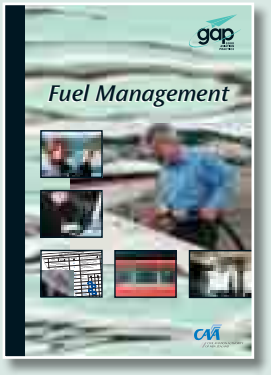
Finished for the Day?

After a day's flying, ensure that the tanks are as full as possible (taking all-up-weight into consideration) to minimise the amount of condensation that can form inside the tanks. When possible, don't leave the aircraft out overnight. If left outside, dew can to build up in the recesses around the fuel tank caps and can enter the tanks when the caps are removed.

More Information

For a free copy of the Good Aviation Practice (GAP) booklet *Fuel Management*, email: info@caa.govt.nz.

Water contamination incidents should be reported to the CAA by following the process on the CAA web site, www.caa.govt.nz, "Report Occurrences Online". ■



Navigating to the **Latest Charts**

The current Visual Navigation Charts (VNCs) became effective 15 November 2012 and now detail the major changes to Queenstown's controlled and uncontrolled airspace. A number of other changes have been made, including the creation of new Visual Reporting Points in the Waikato and Auckland areas.

To Order

To order your printed charts online, visit the web site, www.aipshop.co.nz, and select one of the "BUY NOW" buttons positioned to the right of the Visual Navigation and Visual Planning Chart images. This will redirect you to the order quantity page. You can then view a different series of charts by clicking on either of the horizontal arrows located at the top of the order form as shown.

The VNCs can also be ordered by phoning Airways' Aeronautical Information Management (AIM) team on 0800 500 045. ■

www.aipshop.co.nz

Chart List

North Island/South Island (1:1 000 000)	VPC A1/A2
Northland/Cook Strait (1:500 000)	VNC B1/B2
Waikato-Manwatu/Canterbury (1:500 000)	VNC B3/B4
Central Plateau/Southern Alps (1:500 000)	VNC B5/B6
Whangarei/Wellington (1:250 000)	VNC C1/C2
Auckland/Hawkes Bay (1:250 000)	VNC C3/C4
Bay of Plenty/Taranaki (1:250 000)	VNC C5/C6
Marlborough/Otago (1:250 000)	VNC C7/C8
West Coast/Queenstown (1:250 000)	VNC C9/C10
Southland/Mount Cook (1:250 000)	VNC C11/C12
Christchurch/Fiordland (1:250 000)	VNC C13/C14
Auckland Terminal/Christchurch Terminal (1:125 000)	VNC D1/D2

Overseas Commercial Operations

If you intend to use a New Zealand registered aircraft in a commercial operation overseas, then give the CAA a heads-up.

The CAA has developed a policy paper that focuses on ensuring that where an aircraft is New Zealand registered, the New Zealand regulatory requirements and company practices are met in the overseas environment.

The policy guidelines are aimed at the wide range of overseas commercial activities that a number of New Zealand operators are currently involved in, but don't cover private flights, or airline operations conducted between New Zealand and overseas states.

This policy will also assist the aviation industry to take advantage of foreign business opportunities by providing reasonable certainty around the levels of safety certification and oversight required by the CAA.

Some of these operations can carry significant safety risks, including those related to terrain, weather, and the operation of aircraft at remote locations. In addition, inherent risks associated with the local political, legal, and regulatory requirements may exist. Safety is the CAA's priority, so keep us in the loop and we can help you mitigate these risks.

To view the "Safety Oversight of Commercial Operations Conducted Offshore" document, visit the CAA web site, www.caa.govt.nz, "CAA Policy". ■

Letter to the Editor

Winch-Launched Gliders – September/October 2012

I notice that your article on Winch-Launched Gliders in the last issue contains the following: "Recently, an aeroplane was transiting through an active glider flying area…".

I have observed of recent times that there still seems to be some confusion by pilots (and, in at least one case, ATC) about a "glider flying area". Some years ago we did indeed have glider flying areas designated on charts as "GFA" followed by a number. There is no longer any such thing as a "glider flying area".

The new rules have "General Aviation Areas". They are instead simply "G" followed by a three digit number. Gliders have the same airspace privileges as any other aircraft. They are quite entitled to fly outside of General Aviation Areas provided they follow the same rules as any other aircraft.

Pilots should not be surprised to find gliders **anywhere** in the airspace. ■

– Ray Burns *(abridged)*

Correction

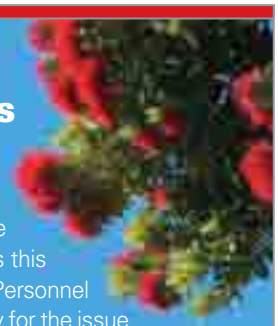
Transponder Mandatory – September/October 2012

In this article, we stated that, "a number of mandatory broadcast zones (MBZs) around the country are also TM, generally in high-traffic areas (Auckland City and Whenuapai MBZs) or around aerodromes with regular passenger transport. These are Kaitaia, Kerikeri, Whangarei, Whakatane, Taupo, Wanganui, Paraparaumu, Westport, Hokitika, and Timaru MBZs."

This statement was too broad for the smaller aerodromes, and we apologise if any confusion has arisen. The TM airspace in the Kaitaia, Kerikeri, Whangarei, Whakatane, Wanganui, Paraparaumu, Westport, Hokitika, and Timaru MBZs is 1500 feet and above, and for the Taupo MBZ, 2500 feet and above for the inner portion, and 3500 and above in the outer portion.

We repeat the reminder to operate your transponder, where fitted, in the ALT mode at all times, regardless of what airspace you are operating in. ■

Licensing and Medical **Reminders**



Please ensure you get your licence issue or amendment applications in early if you require your licence before the holidays, as this is a very busy time for the CAA's Personnel and Flight Training Unit. The last day for the issue of licences is Friday 21 December 2012. Licences will be issued again from Monday 7 January 2013.

Licence applications are dealt with in the order received. If applying for a new licence, you will need to satisfy the Director of Civil Aviation that you meet the fit and proper person (FPP) requirements of the Civil Aviation Act 1990. As an approximate guide, allow six weeks before your flight test to complete the FPP process.

Payments for the Medical Certificate Application Fee can be made online (details on page 11) during the holiday period. If completing the application and payment manually, please send them to the medical unit well in advance.

Queenstown Update

Since the last issue of *Vector*, and more importantly, since the 2012 VNCs were printed, there has been a change to the dimensions of G756, Skyline. Basically, it reverts to the same shape as it was in its previous life as G750, Queenstown, but retains the new number and name.

The article "Queenstown Airspace" in the last *Vector* described the G756 boundaries in terms of local landmarks. This description is now: a straight line from Sunshine Bay jetty to Ben Lomond; another straight line from Ben Lomond to Bowen Peak; a straight line to intersect Gorge Road at the first right-angle bend north of The Gorge; Gorge Road itself as far as the Shotover/Stanley Streets roundabout; a line from there to the corner of the lake by Queenstown wharf (opposite Ballarat Street); then the lake shoreline back to the Sunshine Bay jetty.

How to Get Aviation Publications

AIP New Zealand

AIP New Zealand is available free on the Internet, www.aip.net.nz. Printed copies of Vols 1 to 4 and all **aeronautical charts** can be purchased from Aeronautical Information Management (a division of Airways New Zealand) on 0800 500 045, or their web site, www.aipshop.co.nz.

Pilot and Aircraft Logbooks

These can be obtained from your training organisation, or 0800 GET RULES (0800 438 785).

Rules, Advisory Circulars (ACs), Airworthiness Directives

All these are available free from the CAA web site. Printed copies can be purchased from 0800 GET RULES (0800 438 785).

Planning an Aviation Event?

If you are planning any aviation event, the details should be published in an AIP Supplement to warn pilots of the activity. For Supplement requests, email the CAA: aero@caa.govt.nz.

To allow for processing, the CAA needs to be notified **at least one week** before the Airways published cut-off date.

Applying to the CAA for an aviation event under Part 91 does not include applying for an AIP Supplement – the two applications must be made separately. For further information on aviation events, see AC91-1.

CAA Cut-off Date	*Airways Cut-off Date*	*Effective Date*
21 Dec 2012	31 Dec 2012	7 Mar 2013
22 Jan 2013	28 Jan 2013	4 Apr 2013
18 Feb 2013	25 Feb 2013	2 May 2013

See **www.caa.govt.nz/aip** to view the AIP cut-off dates for 2012–2013.

Aviation Safety Advisers

Aviation Safety Advisers are located around New Zealand to provide safety advice to the aviation community. You can contact them for information and advice.

Don Waters (North Island)
Tel: +64 7 376 9342
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Email: Bob.Jelley@caa.govt.nz

Aviation Safety & Security Concerns

Available office hours (voicemail after hours).

0508 4 SAFETY
(0508 472 338)
isi@caa.govt.nz

For all aviationzrelated safety and security concerns

Accident Notification

24-hour 7-day toll-free telephone

0508 ACCIDENT
(0508 222 433)
www.caa.govt.nz/report

The Civil Aviation Act (1990) requires notification "as soon as practicable".

Accident Briefs

More Accident Briefs can be seen on the CAA web site, www.caa.govt.nz, "Accidents and Incidents".
Some accidents are investigated by the Transport Accident Investigation Commission, www.taic.org.nz.

ZK-HPQ Robinson R22 Beta

Date and Time:	20-Jun-11 at 14:00
Location:	Mount Campbell
POB:	2
Injuries:	0
Damage:	Substantial
Nature of flight:	Training dual
Pilot Licence:	Commercial Pilot Licence (Helicopter)
Age:	31 yrs
Flying Hours (Total):	3003
Flying Hours (on Type):	1450
Last 90 Days:	105

The helicopter was on a dual mountain flying training exercise, and had landed in a clearing about 3800 feet amsl. The pilot took off and climbed vertically to a 50-foot hover before transitioning into forward flight, at which point the rotor rpm decayed and the helicopter started to yaw to the left. The instructor took control and lowered the collective, but was unable to restore the rotor rpm, so made a forced landing back in the clearing. The helicopter rolled over on landing. Engineering investigation found no reason for the apparent power loss.

CAA Occurrence Ref 11/2697

ZK-HXA Robinson R44

Date and Time:	29-Jun-11 at 11:35
Location:	Otautau
POB:	1
Injuries:	0
Damage:	Substantial
Nature of flight:	Ferry / Positioning
Pilot Licence:	Commercial Pilot Licence (Helicopter)
Age:	31 yrs

The pilot lifted off from the hover to move back a few feet to a more level loading spot, when the engine rpm increased well beyond limits. The pilot made a precautionary run on landing while attempting to bring the engine rpm under control. During the run-on landing the helicopter did not stop at the anticipated point and continued 20 metres further onto a track. The helicopter came to rest upright in a ditch beside the track, 40 metres from the initial landing spot. The tail rotor struck a fence, resulting in separation of the tail rotor, gearbox and both stabilizers. The right skid was also damaged.

It was thought that the governor had failed. The governor was replaced and the aircraft was repaired.

CAA Occurrence Ref 11/2836

ZK-HID Schweizer 269C

Date and Time:	23-Aug-09 at 16:30
Location:	Apiti
POB:	1
Injuries:	0
Damage:	Substantial
Nature of flight:	Agricultural
Pilot Licence:	Commercial Pilot Licence (Helicopter)
Age:	40 yrs
Flying Hours (Total):	3500
Flying Hours (on Type):	1500
Last 90 Days:	53

At the commencement of a spray run, the helicopter struck an electric fence wire that was strung along a boundary fence. The pilot was unaware of the existence of the electric fence wire above the boundary fence and it could not be seen prior to impact. The spray boom, vertical stabiliser and a main rotor blade were damaged. The pilot landed without further incident.

CAA Occurrence Ref 09/3513

ZK-EBW Piper PA-28-161

Date and Time:	30-Jan-09 at 11:16
Location:	Kaitorete Spit
POB:	2
Injuries:	0
Damage:	Destroyed
Nature of flight:	Training dual
Pilot Licence:	Commercial Pilot Licence (Aeroplane)
Age:	23 yrs
Flying Hours (Total):	890
Flying Hours (on Type):	449
Last 90 Days:	150

The aircraft was carrying out a dual simulated forced landing. On the go-around from low level, the aircraft struck a power line. The wire became tangled around the tail, and at approximately 10–15 feet above the ground the aircraft jerked and suddenly slowed before pitching down into the ground.

The instructor secured the aircraft and both he and the student vacated the cockpit. A small grass fire had started near the front of the aircraft, so the pilot used the extinguisher to put that out. When he looked up, however, he noticed that most of the field was on fire due to the fallen power wire. The instructor and student vacated the area and called the emergency services. The aircraft was destroyed by the fire.

CAA Occurrence Ref 09/189

ZK-CTC Diamond DA20-C1

Date and Time:	06-Sep-11 at 09:00
Location:	Raglan
POB:	1
Injuries:	0
Damage:	Minor
Nature of flight:	Training solo
Age:	26 yrs
Flying Hours (Total):	70
Flying Hours (on Type):	42
Last 90 Days:	42

The pilot joined the circuit for a touch-and-go. While the pilot believed the approach was normal, the aircraft touched down one third of the way into the runway. The aircraft bounced and rather than going around, the pilot allowed the aircraft to float down the runway for a second touchdown. This occurred half to two thirds of the way down the remaining runway distance. Despite braking, the aircraft overran the runway end and struck a fence at 20 to 30 knots. The propeller was damaged, with a 12-centimetre chip out of one blade. The crankshaft was also damaged, necessitating an engine strip-down and rebuild.

CAA Occurrence Ref 11/3993

ZK-FMA Cessna A185F

Date and Time:	24-Jul-09 at 10:30
Location:	Mt Aspiring National Park
POB:	3
Injuries:	0
Damage:	Substantial
Nature of flight:	Transport Passenger A to B
Pilot Licence:	Commercial Pilot Licence (Aeroplane)
Age:	50 yrs
Flying Hours (Total):	5730
Flying Hours (on Type):	3814
Last 90 Days:	15

During the landing roll, the aircraft crossed an area of standing water hidden below a thin layer of snow. This slowed the aircraft sufficiently to cause it to pitch over onto its roof. The aircraft was substantially damaged.

CAA Occurrence Ref 09/2823

ZK-SML Dyn' Aero MCRO1 Club

Date and Time:	09-Apr-11 at 10:30
Location:	Nelson 15 NE
POB:	1
Injuries (Fatal):	1
Damage:	Destroyed
Nature of flight:	Private Other
Age:	85 yrs
Flying Hours (Total):	316
Flying Hours (on Type):	265
Last 90 Days:	45

The owner-pilot was on a cross country flight from North Shore to Ashburton, but failed to arrive at the expected time. Emergency services were notified, and a search commenced. The aircraft was located two days later on the north-west slope of Mount Duppa, in the Bryant Range. The pilot had died in the accident.

Two experienced pilots, both of whom had either been flying or driving in the area at the time of the accident, described the weather as extremely poor, with a low cloud base and light drizzle.

A full report is available on the CAA web site.

CAA Occurrence Ref 11/1504

ZK-VVV Heydecke V16

Date and Time:	29-Aug-09 at 17:54
Location:	Drury
POB:	1
Injuries (Minor):	1
Damage:	Substantial
Nature of flight:	Test
Pilot Licence:	Private Pilot Licence (Aeroplane)
Age:	31 yrs
Flying Hours (Total):	209
Flying Hours (on Type):	7
Last 90 Days:	11

The pilot was conducting stalls as part of the test flying regime. On the second stall, the left wing dropped and the aircraft entered a spin. Standard recovery techniques did not arrest the spin, so the pilot transmitted a distress message and deployed the aircraft ballistic recovery chute. The aircraft sustained damage to the propeller and undercarriage on landing in a farm paddock. The pilot was able to vacate the aircraft with only minor injuries.

CAA Occurrence Ref 09/3338

ZK-HWJ Robinson R22 Beta

Date and Time:	13-Feb-09 at 19:30
Location:	Wanaka
POB:	1
Injuries:	0
Damage:	Substantial
Nature of flight:	Private Other
Pilot Licence:	Private Pilot Licence (Helicopter)
Age:	50 yrs
Flying Hours (Total):	781
Flying Hours (on Type):	781
Last 90 Days:	29

The pilot placed a 'chilly-bin' on the passenger seat and secured it with the seat belt. While the plot was manoeuvring to land, the bin slipped out from the seat belt and obstructed the cyclic. The control restriction was such that full control could not be maintained, causing the aircraft to roll over during landing.

CAA Occurrence Ref 09/458

GA Defects

GA Defect Reports relate only to aircraft of maximum certificated takeoff weight of 9000 lb (4082 kg) or less.
More GA Defect Reports can be seen on the CAA web site, www.caa.govt.nz, "Accidents and Incidents".

Key to abbreviations:

AD = Airworthiness Directive
NDT = non-destructive testing
P/N = part number
SB = Service Bulletin
TIS = time in service
TSI = time since installation
TSO = time since overhaul
TTIS = total time in service

Piper PA-32S-300

Brakes

ATA Chapter:	3240

On commencing the takeoff roll, the pilot noticed that the brakes had not released and appeared to be locked for a moment. When the brakes released, the pilot decided to cancel the flight and taxi back to the apron.

During taxi, the brakes appeared to become free initially but then began to hold again. On parking, the pilot felt something snap and the brakes became soft and ineffective. The pilot closed the throttle immediately, however the aircraft's momentum carried it forward into a wooden marker board, damaging the propeller and the leading edge of one wing.

Maintenance investigation determined that the park brake had not been fully released before taxiing. During taxi, the brakes had heated to such an extent that they bound and seized. Once they had cooled, the pilot was able to manoeuvre the aircraft once more, however further heating caused the brakes to bind again. Significant power was applied to taxi the aircraft back to the parking area. The application of power to overcome the binding brakes resulted in the brake pads on both main wheels overheating and detaching from the backing plates, resulting in the complete failure of the braking system. The brake pads and seals were replaced and the brake system was functionally checked for correct operation. The fault could not be reproduced.

CAA Occurrence Ref 11/3498

Robinson R44

Oil filter adapter

Part Manufacturer:	Airwolf
Part Number:	KP4FS464/MS27640-4
ATA Chapter:	7300
TSI Hours:	50
TTIS Hours:	1912.8

When the oil filter was removed during a 50 hour check, the internal seal in the oil filter was found blocking all the inlet holes to the oil filter. Further inspection revealed that the hoses were incorrectly connected to the engine, causing the oil to flow backwards through the oil filter and making the seal block the filter. The hoses had been incorrectly connected at the engine installation 50 hours earlier.

CAA Occurrence Ref 11/520

Cessna 172S

Prop forward bulkhead

Part Manufacturer:	Cessna
Part Number:	0552231-2
ATA Chapter:	6110

During routine inspection, cracking was found around the spinner bulkhead holes. This defect was also found on four other Cessna 172S aircraft. Investigation by the maintenance provider found that the forward bulkhead holes all had very sharp edges, and were 0.010 inch smaller in diameter than the propeller attachment bolt holes. This led to the bulkhead holes being formed into the chamfered area of the propeller attachment hole passages on assembly. The 'seating' of the smaller holes into the larger ones, in conjunction with the poor de-burring, resulted in the appearance of cracks after about 300 hours' time in service.

All cracked units were replaced with serviceable units.

The relevant Cessna 172 maintenance manual detailed provisions for drilling the forward spinner bulkhead holes to a larger size, but the maintenance engineers had been unaware of this. The maintenance organisation has highlighted the need to pay special attention when reading through the aircraft maintenance manual, and the importance of following procedures detailed in the maintenance manuals and related documents such as airworthiness directives.

CAA Occurrence Ref 11/4718

Bell 206B

Tail rotor gearbox attachments

Part Model:	BII
Part Manufacturer:	Bell Helicopter
Part Number:	206-040-400-11
ATA Chapter:	6500
TSI Hours:	190
TSO Hours:	1220
TTIS Hours:	9297.7

During flight the pilot felt excessive vibration in the tail rotor. He then flew the helicopter to the maintenance facility. Engineering inspection found that one of the four tail rotor gearbox attachment studs had broken off. The gearbox was sent to an overhaul agency to be repaired and after re-installation of the gearbox, the vibration was still excessive. Further inspection found that the tail rotor trunnion had excessively worn bearings, causing movement between the trunnion and the tail rotor hub. The tail rotor and hub were sent for repair and static balance. The aircraft was eventually returned to service. It is likely that vibration from the worn trunnion bearings caused the attachment stud on the gearbox to fail.

CAA Occurrence Ref 11/1122

Piper PA-38-112

Nose wheel steering

ATA Chapter:	3250
TTIS hours:	4414

The nose wheel started to shimmy vigorously while the aircraft was backtracking for takeoff. The pilot decided to cancel the flight, and while taxiing back to the apron, the right rudder pedal appeared to jam. The aircraft turned into a gutter and the right wing struck a drum-like structure.

Maintenance investigation included a full inspection of the rudder and nose wheel steering system, and found no defects that could cause a loss of directional control during taxiing. Precautionary work carried out was: nose wheel balanced, nose oleo scissor links tightened, and rudder cables adjusted from lowest tension to upper tension limits as per maintenance manual. An instructor carried out a check flight on the aircraft and reported everything satisfactory.

CAA Occurrence Ref 11/5854

Cessna 172S

Fuel control unit

Part Manufacturer:	Precision
Part Number:	2576536-2
ATA Chapter:	7320
TSO hours:	324
TTIS hours:	3627

The engine failed during stalling practice, and the pilot made a forced landing onto the runway. The engine had been slow to respond during the recovery from a previous stall.

Maintenance investigation found that the fuel control unit diaphragm had not been centred correctly and had been catching, effectively creating a hole, which could have caused rich fuel flow when the throttle was closed. The defective fuel control unit was replaced and the aircraft returned to service.

CAA Occurrence Ref 11/4883

Aerospatiale AS 355 F1

Tail rotor attach yoke/hub

ATA Chapter:	6520

During a routine inspection the engineers noticed cracking and movement of the PRC sealant between the gearbox shaft and the tail rotor yoke and also the bolt head, locking tab and tail rotor yoke.

It was determined that the newly exposed surfaces of PRC were still clean and uncontaminated, so the assumption was made that this movement had occurred recently, probably during the previous 20 hours of flight. When the tail rotor yoke was removed the locating key was found to have sheared.

Despite extensive examination and consultation with the manufacturers, no conclusive reason could be determined for the shearing of the locating key.

CAA Occurrence Ref 11/4712

Piper PA-28-161

Engine crankcase

Part Manufacturer:	Lycoming
ATA Chapter:	8500
TSO Hours:	1612
TTIS Hours:	5846.2

Would you have seen this on a preflight?

During an unscheduled inspection, the lower half of the engine was found to be covered in oil. Further investigation revealed a crack in the crankcase in the vicinity of the No. 2 cylinder, lower forward cylinder base stud. The engine was removed for repair. The maintenance provider carrying out the repair could not positively determine the cause of the cracking, however unequal torque on the cylinder hold-down nuts, or fretting between the cylinder base and crankcase flange may have been factors.

CAA Occurrence Ref 11/1160

Cessna P206E

Bush

Part Model:	IO-520A
Part Manufacturerl:	Teledyne Continental
ATA Chapter:	8520

Bearing and bush. Asymmetric wear of bush due to spinning in housing.

During engine operation, the alternator drive belt was being repeatedly thrown from the pulleys.

Maintenance investigation found that the starter adapter spigot bearing located in the crankcase had been previously bushed. The bush retaining pin had failed, allowing the bush to spin, resulting in chattering of the gear drive train in the engine accessory case.

It was suspected that the bush may have been an unapproved repair, however there was no evidence in the engine logbooks to indicate when this may have been carried out. The engine was remanufactured in 1998 and it is probable that the bush insert was in place when shipped after remanufacture. The engine manufacturer has been informed.

CAA Occurrence Ref 11/1798

Summer Traffic Busy Spots

Don't inadvertently fly into an aviation event – check your AIP Supplements for planned events near you. If you don't subscribe personally, you can download the AIP Supplements for free from www.aip.net.nz.

This map shows the known flying events between late November 2012 and mid-March 2013.

Great Northern Air Race

26 to 28 January 2013

- 26 January: North Shore – Kaitaia – Kerikeri
- 27 January: Kerikeri – Whenuapai – Whitianga
- 28 January: Whitianga – North Shore

Waitangi

RNZAF Air Display
6 February 2013

Hamilton

Waikato-Northern Regional Gliding Contest
24 November to 1 December 2012

RNZAF Air Display – Meremere, Waikato
26 to 27 January 2013

North Shore

North Shore NZ International Airshow
26 to 28 January 2013

Matamata

Walsh Memorial Flying School CTR NZA292
8 to 22 January 2013

Auckland

RNZAF Auckland Harbour Air Show
28 January 2013

Woodville

Fly-in to Athbey Farm Strip
1 January 2013

Napier

Warbirds over Awatoto (Model aircraft)
Temp Danger NZD490 active
23 to 24 February 2013

Motueka

Flying NZ (RNZAC) National Flying Competitions
21 to 24 February 2013

Waipukurau

NZ Aerobatic Championships
14 to 16 March 2013

Dannevirke

AutoGyro Fly-in
26 to 28 January 2013

Speight's Coast to Coast

7 to 9 February 2013

★ Between Kumara, West Coast and Waimakariri River, Canterbury

Masterton

Wings over Wairarapa
18 to 21 January 2013

Ashburton

Great Plains Fly-in
8 to 10 February 2013

NZ Air Safari 2013

19 to 29 March 2013

- 19 March: Masterton – Hokitika – Wanaka
- 21 March: Wanaka – Taieri – Timaru
- 22 March: Timaru – Kaikoura – New Plymouth
- 24 March: New Plymouth – Taumarunui – Hamilton
- 25 March: Hamilton – Whenuapai – Whitianga
- 26 March: Whitianga – Tauranga – Gisborne
- 27 March: Gisborne – Hastings – Paraparaumu
- 28 March: Paraparaumu – Motueka

South Island National Paragliding Competition

1 to 10 February 2013

Area of operation:

Mt Aspiring – Mt Cook – Omarama, Omakau – Queenstown

South Island Gliding Contest

1 to 12 January 2013

In an **area encompassing**:

Elie de Beaumont, Mt Aspiring, Mt Earnslaw, The Key, Lumsden, Macraes Flat, Geraldine, Oxford, Cass

Keep these events on your calendar

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