Eight hours?

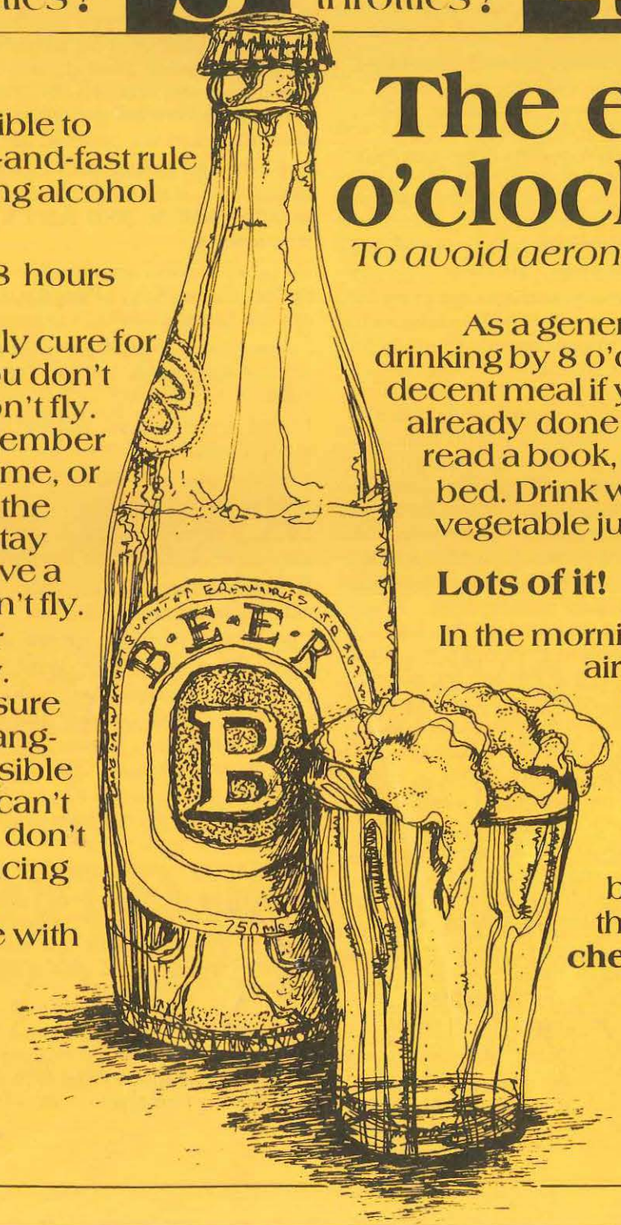
Bottle* to Throttle

2	bottles or throttles?	3	bottles or throttles?	4	bottles or throttles?

It is not possible to establish a hard-and-fast rule regarding drinking alcohol and flying.

Have at least 8 hours **sleep**.

Sleep is the only cure for a hangover. If you don't feel rested . . . don't fly. If you can't remember how you got home, or any other part of the night before . . . stay in bed. If you have a headache . . . don't fly. If you feel sick or dizzy . . . don't fly. There's no pleasure in flying with a hang-over. Have a sensible breakfast. If you can't face breakfast. . . don't even consider facing an aeroplane . . . certainly not one with passengers.



The eight o'clock rule.

To avoid aeronautical misery:

As a general rule, finish your drinking by 8 o'clock. Have a decent meal if you haven't already done so. Go for a walk, read a book, watch TV or go to bed. Drink water, fruit juice, vegetable juice or soup.

Lots of it!

In the morning get some fresh air, a little exercise, have a shower and drink more juice or water . . . not tea or coffee.

Have a light breakfast. Spend the day **double-checking** everything.

*750 mls beer

Designed by Lesley Gordon

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Contents

Editorial

It all depends on the pilot

I was recently asked for advice on the best means of travel for a family trip. Would I recommend a light aircraft? Was it safe? How did it compare with road travel?

I thought about it for some time as the people asking were close friends.

I honestly couldn't say that flying was safer than road travel as I wasn't sure of the statistics in terms of number of passsengers, number of vehicles, distances travelled, probability of accidents, probability of serious injury or death as a result, probability of breakdown or mechanical failure, probability of injury as a result of the failure, vulnerability to weather and the probability of a resulting accident or injury, reliability of safe and timely arrival, and of course, relative costs versus speed, comfort and ease of travel.

As a pilot, I felt intuitively that flying was safer. I am more comfortable in an aircraft than in a motor vehicle. I know and understand the aircraft and its environment. I feel that the likelihood of being killed or injured on the road is greater as I am more vulnerable to the mistakes of others. At least in an aircraft, if I am killed, it will probably be my own fault.

And that was the crux of it. Safety depended on who was 'driving'. I am a reluctant passenger in an aircraft if I don't personally know the pilot and know his or her attitudes, temperament, behaviour under stress and ability. In the case of RPT travel I rely on the selection, the training and the close supervision of aircrews associated with those operations — although I still sit up in response to the throttles being cycled on final, larger than normal attitude changes and unexpected or unusual noises.

However, I would rather drive than fly as a passenger in an aircraft with a pilot that I did not know. My advice to my friends was to travel by air — if they could afford delays due to weather and only to fly with a pilot that was safe!

But how do you tell?

- By his dress?
- By her manner?
- By his confidence?
- By the thoroughness of her preparation?
- By the cleanliness of the aircraft?
- By intuition?

The advantage that we have as pilots, is that we know the pilot — don't we? We know how we will react under stress — don't we? We know that we won't skimp on preparation — don't we? We know that we won't take short cuts which may increase risks — don't we? We know that everything necessary for a safe flight has been checked, personally — don't we ? We know that we wont be pressured into risky situations without having a way out — don't we? We know when our personal performance is not up to par and we make allowances for it — don't we?

With us, flying is much safer than driving — isn't it?

DAVID ROBSON
Editor

Covers

Front. A touch of nostalgia. Perhaps the most successful training aircraft of all time, the Tiger Moth is still a joy to fly — on a nice day.
Geoff Aitken's Tiger at Prairie, 1987.
Photo by David Robson.
NIKON F Kodacolor Gold

Back. The most serious drug problem in the aviation community? Coming to grips with the 'social' use of alcohol can require considerable self-discipline. When have we had enough? Each of us must decide for ourselves and be responsible for our own condition. It may not be easy.
Poster design by Lesley Gordon

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P 8, 21 *BASI*
P 13 *RAAF*
P 17, 19 *David Robson*

Diagrams: *P 5, 9, 10, 11, 14* *adapted by Soussanith Nokham and Peter Garfield*
Cartoon: *Gapinski*

Gone with the wind

This article previously appeared in Aviation Safety Digest *number 97.*

Encountering turbulence generated by the gusty crosswind conditions on final approach, the pilot maintained a speed of at least 75 knots until he had crossed the threshold. After rounding out, however, the aircraft floated for over 300 metres before touching down on the mainwheels. The nosewheel quickly dropped to the ground and still at high speed the aircraft skipped three or four times before settling onto the ground. Almost immediately the nosewheel began to oscillate and the aircraft swung rapidly to starboard under the influence of the crosswind until it was heading towards the edge of the runway. The pilot attempted to regain directional control but the aircraft left the sealed surface and headed directly towards two cone markers on the boundary of the flight strip. Though he was now pressing hard on the left rudder pedal, the pilot was unable to check the swing and the aircraft smashed through the markers into a bank of soft sand. The nosewheel broke off and the aircraft came to an abrupt halt on its nose, extensively damaged.

TO MANY PILOTS, even quite experienced ones, the prospect of a crosswind landing remains something of a secret fear — something to be ignored most of the time in the pious hope that if ever they have to make a 'maximum effort', they will be able to cope — somehow!

This article encourages pilots to face this situation, explaining what is involved and enjoining practices which will enable crosswind difficulties to be accepted with confidence and skill.

Arriving over a country aerodrome, the owner-pilot of a newly restored vintage aircraft estimated from the windsock that the wind was blowing from the east at about ten knots. Anticipating that these conditions would produce only a slight crosswind component on the 12-duty strip, the pilot decided to practise some crosswind landings and carried out a circuit and approach. After touching down, the aircraft bounced, but when the pilot saw that it was not drifting, he decided to continue with the landing and applied power to cushion the descent. But as the aircraft touched down again, the port wing suddenly lifted and the aircraft swung rapidly off the strip into a cultivated area in the middle of the aerodrome. Unable to check the swing, even with full rudder and aileron, the pilot opened the throttle to go around but, realising the swing had progressed too far, promptly closed it again. As the aircraft skidded downwind, the port wheel dug into the soft earth, one of the undercarriage bracing struts collapsed, and the aircraft pitched forward onto its nose and overturned, coming to rest on its back. It was subsequently determined that at the time of the accident, the wind was indeed blowing from the east but was gusting to about 25 knots, producing a crosswind component in excess of the maximum permitted for the aircraft type.

Admittedly, such aircraft are not easy to handle in a crosswind and it may seem a little unfair to select an accident like this as an example of mismanaging a crosswind landing in a light aeroplane. However, the Department's records show that the sort of problems experienced in this case are by no means confined to earlier types of aeroplanes and that crosswind landing accidents are continuing to occur in many modern light aircraft, despite the inherent directional stability of their nosewheel undercarriages.

Typical of these is an accident involving the pilot of a Cherokee. Arriving over his destination, which had only a single, sealed east-west runway, the pilot circled the aerodrome twice while he assessed the wind strength and planned his approach. As it turned out, the wind, a southerly of about ten knots, was blowing virtually at right angles to the runway, and as it did not particularly favour either direction, the pilot eventually decided to land into the east.

Planning ahead

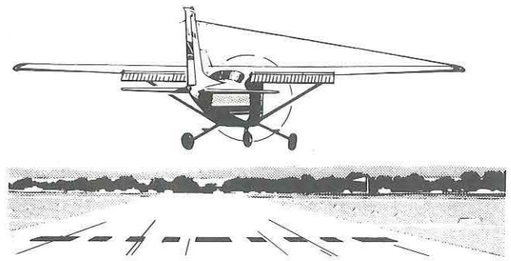
Planning for a crosswind landing, as with any other type of landing, should begin well in advance of the actual approach and touchdown. Correction for drift in the circuit is quite different to that normally required and allowance for it must be made early to avoid distortion of the circuit pattern. Special care is needed on the downwind leg to ensure that the aircraft tracks parallel to the intended landing path and thus maintains the correct distance from it. The pilot also needs to remember that ground speeds on crosswind and base legs will be different to those he is used to and he should be prepared to begin the turn onto final approach earlier or later than usual, depending on the wind direction, in order to roll out of the turn correctly lined up with the runway.

The approach

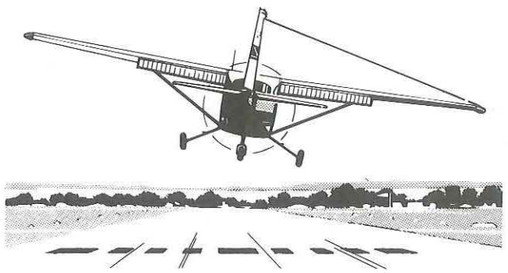
As most pilots will recall from their student days, a good approach makes for a good landing, and a good approach rarely follows a poor circuit. This is especially so in crosswind conditions where any error in assessing drift in the circuit or on final approach will make judgment more difficult and only increase the chances of a poor or misjudged landing.

There are two fundamental methods of compensating for drift during an approach to land out of wind:

- By heading the aeroplane sufficiently into wind to counteract the drift and, with the wings level, tracking or crabbing along the intended landing path.



- By lowering the up-wind wing and, holding on opposite rudder to stop the turn, side-slipping the aircraft sufficiently to descend in line with the landing direction.



Of these two techniques, the crabbed approach is the more straightforward method of compensating for drift. Once a crab angle sufficient to cope with the conditions has been established, the aircraft handling, at least up to the point of touchdown, is quite straightforward and similar in all other respects to a normal approach.

In the case of the side-slipping technique, however, there are several important considerations to be taken into account. In many aircraft types, flight manual requirements prohibit extended side-slips with low-fuel quantities because of the danger of uncovering the tank outlets and causing engine failure from fuel starvation, a situation which could be extremely embarrassing at low height! In some aircraft too, side-slipping with flaps extended beyond a particular setting is not recommended because of the possibility of shielding the tail surfaces from airflow and producing a sudden nose-down pitch which could be difficult to correct close to the ground.

Yet another and perhaps not quite so obvious shortcoming of this type of approach is the possibility of 'running out of control'. In a very strong crosswind, considerable into-wind aileron and a correspondingly large rudder deflection may be necessary. In these circumstances, there may be insufficient control travel remaining for the pilot to right the aircraft should an exceptionally strong gust or unexpected turbulence cause an upset near the ground.

Touchdown

During a crosswind landing, the wind force acts over the entire side area of the aircraft and tends to push it towards the downwind side of the runway. This force is proportional to the square of the crosswind velocity; thus, in a ten knot crosswind, the side force on the aircraft would be quadruple that produced by a five knot wind component. Generally, the centre of pressure of this crosswind force acts aft of the centre of rotation (the main undercarriage) so that a yawing moment which tends to make the aircraft weathercock into the wind is usually produced.

Undercarriages are not designed to withstand heavy side loads, a fact brought home only too clearly by accidents such as those described at the beginning of this article. It is imperative therefore that the aircraft is not permitted to contact the ground while drifting and that at the moment of touchdown it is aligned with the runway.

As in the case of the crosswind approach, there are two basic methods of counteracting drift at the point of touchdown. Both are simply extensions of the techniques already described. If the crabbed approach is used, the touchdown technique consists of flaring the aircraft in the normal way, with the drift correction still applied, and then as speed diminishes and the aircraft begins to settle towards the runway, smoothly but firmly applying rudder to yaw the aircraft into line with the landing path just before it touches down. As the aircraft is straightened in this way, opposite aileron should be used if necessary to keep the wings level.

Despite the obvious advantages of the crabbed approach, this exercise of 'decrabbing' immediately before touchdown calls for a very high degree of skill and judgment. The pilot must resist the temptation to align the aircraft with the runway too soon or, though still pointing in the landing direction, it will quickly commence drifting towards the downwind edge of the runway. Any attempt at this stage to re-align the aircraft by making a co-ordinated turn into wind will almost certainly result in it striking the ground while drifting downwind. Conversely, if the pilot waits too long to straighten up, the aircraft will touch down at an angle to the runway, subjecting the undercarriage to the very loads which the exercise is intended to avoid. And even if the pilot has correctly judged his height above the runway and he starts to reduce the crab angle at what he estimates to be the right moment, he may still find himself in difficulties. Decaying airspeed during the hold-off might well have reduced rudder effectiveness to the point that, even with full-pedal deflection, there may be insufficient control available to yaw the aircraft into line before the wheels touch the ground.

By contrast with these difficulties, landing off a side-slipping approach does not require such precise judgment or timing. The aircraft is already aligned with the runway and after what is virtually a normal flare and hold-off, the aircraft touches down without drift on the upwind mainwheel. The fact that the upwind wing remains lowered also provides some measure of protection against strong sideways gusts.

The combination method

The crosswind landing technique which probably gives the greatest degree of control without making unnecessarily high demands of pilot skill is the combination crab-slip method. In this type of approach and landing, the pilot compensates for drift on the approach by crabbing the aircraft into wind and holding the drift correction until after the aircraft is flared for landing. But as the speed begins to diminish and before the aircraft starts to settle towards the ground, the pilot transitions to the slip method by yawing the aircraft into line with the runway while speed is still sufficient to maintain rudder effectiveness. Then, when the aircraft is tracking straight down the runway, the upwind wing is lowered smoothly to prevent further drift and the hold-off continued until the upwind wheel touches the ground. After touchdown, the aircraft is kept straight by using a combination of rudder and upwind aileron.

Directional control after touchdown

Maintaining directional control after touchdown in a tailwheel aircraft generally presents no major difficulty provided a wheel-landing technique is used. The aircraft is held straight initially by the careful application of rudder and then judicious use of brakes as the tailwheel is lowered to the runway. Into-wind aileron helps prevent the upwind wing from rising in a strong gust.

In nose-wheel aircraft, however, there are the limitations of nosewheel steering to contend with. A few modern general aviation aircraft have fully castering, non-steerable nosewheels but the great majority have some form of steering system. On some types, the steering is not direct but arranged through a spring linkage so that when the wheel is off the ground and the strut is fully extended, the wheel automatically aligns itself with the centre-line of the aircraft. But on most others, the nosewheel is coupled to the rudder pedals by a direct-acting linkage so that the wheel turns whenever rudder is applied. It is this arrangement which can lead to handling problems in crosswind landings. For no matter which crosswind technique is used, rudder application (sometimes full deflection) is necessary to align the aircraft with the runway. If the nosewheel is allowed to contact the ground with rudder still applied, the aircraft will immediately swing in the direction in which the wheel is turned regardless of the wind direction.

A deliberate effort is therefore required to centralise the rudder pedals before the nosewheel touches down to avoid the onset of an uncontrolled swing and ground loop. Pilots must also bear in mind that a similar manoeuvre could result if, in an endeavour to hold the aircraft on the ground, too much forward elevator control is applied at too high a speed, thus transferring most of the aircraft's weight to the nosewheel. In some instances, this could lift the mainwheels clear of the runway altogether.

General technique

As a general rule, it is preferable to carry out powered approaches in crosswind conditions. The use of power helps a pilot regulate the rate of descent over a very wide range to compensate for varying wind strengths. It also results in a smaller change in attitude during the landing flare compared with that for a full-glide approach. Furthermore, whenever the wind is strong and gusty, no matter from which direction it is blowing, it is always desirable to use a slightly higher approach speed to provide a greater measure of control and a higher margin above the stalling speed. On the other hand, the use of too high a speed in a crosswind can lead to many kinds of problems. For instance, as the crosswind angle increases, the headwind component decreases until, with a wind blowing at right angles to the runway, the headwind component is reduced to zero. An excessively high approach speed in these circumstances, no matter how hard the wind is actually blowing, will result not only in a significant increase in the landing distance but also in a much higher ground speed at touchdown, which could well lead to handling difficulties in some types of nosewheel aircraft.

Some pilots, in an attempt to offset the crosswind effect, aim to land near the downwind edge of the runway, apparently reasoning that by allowing themselves this additional manoeuvring space, they would have more chance of recovering control should the aircraft start to weathercock to into-wind after touching down. These pilots, however, overlook the fact that in this situation it would not take an especially strong gust to blow the aircraft off the runway altogether, possibly into a rough or otherwise unserviceable area. Others, thinking along slightly different lines, plan their approach for the up-wind side of the runway to provide an additional margin should the aircraft begin to drift downwind before the wheels contact the ground. This technique has an inbuilt snag in that if the aircraft did weathercock after touchdown, the pilot might not have room to regain directional control before it runs off the runway. All things considered, it is far better to adhere to established techniques and to aim to touch down about the normal distance in from the threshold as near as possible to the centre line.

Pilots should at all times guard against the error of touching down first on the downwind wheel. This raises the upwind wing, presenting a large surface area to the wind. Not only does this increase the chance of the aircraft being blown laterally off the strip but it can also induce a rolling motion which, once developed, can be very difficult to correct. A similar effect can be produced if the aircraft touches down near the downwind edge of a heavily cambered surface.

Practice

Pilots should be capable of handling a variety of crosswind conditions competently and safely. In addition to operations at major airports where procedures frequently call for landings out of wind, they may be confronted from time to time with unexpected situations such as a temporary obstruction on an into-wind runway of an in-flight diversion to an aerodrome where the wind may be blowing strongly at an angle to the only available strip.

As precise judgment is required to estimate height and drift angle in crosswind conditions, and a high degree of co-ordination is necessary to correctly align the aircraft with the touchdown direction, proficiency in crosswind landings is a skill that can only be maintained by regular practice. Traffic at busy secondary airports does not always permit operations contrary to the normal circuit pattern but frequently, even on the duty runway, there is a small crosswind component which should be properly allowed for. Pilots should use these opportunities to practise and perfect their crosswind landing technique rather than simply ignoring this factor and trusting the aircraft's normally forgiving tricycle undercarriage to cope with side loads and sort out the directional stability problems

Maximum crosswind components are normally specified in the aircraft flight manual. These values are generally based on tests carried out by the manufacturer and represent the maximum crosswind values at which the aircraft has been demonstrated (in dry conditions) to possess satisfactory handling qualities. Such demonstrations are usually conducted by test pilots and the results may well be regarded as being a limitation for the type. Pilots should therefore exercise discretion in strong crosswind conditions to ensure that the operations are confined to crosswinds within their own capabilities and to accept that this may be significantly less than the crosswind component referred to in the flight manual □

It's that time again

THE PILOT held a RPPL and had a total of 52 hours experience. He was authorised for a two-hour flight in the training area which was over French Island.

The pilot and a passenger took-off at about 1445 hr. The tanks contained 100 litres of fuel.

The aircraft had flown about three hours already that day and had about 36 hours to go before the next 100 hourly.

The weather was warm and humid.

A number of manoeuvres were carried out in the training area including power changes. Aircraft behaviour and engine response appeared normal.

After about an hour's flying, the pilot decided to try a practice forced landing into a disused dirt airstrip at the north-west corner of the island.

The aircraft was at a height of 1000 feet and the pilot selected carby heat on before reducing power. He performed the normal drills — glide speed, field selection and trouble checks and then set up a pattern for an approach into the north.

He did not exercise the throttle during the glide.

Approaching a height of 200 feet on final, with 30 degrees of flap, he selected carby heat to cold and pushed the throttle forward.

The engine didn't respond fully — only about 1300-1500 rpm was obtained. He turned right towards open country and opened and closed the throttle twice without a satisfactory response.

He reduced the flap setting to 20 degrees. Mixture was fully rich and the carby heat was left in the cold setting.

The stall warning was sounding and the airspeed was decaying.

The pilot avoided several trees, 'ballooned' over three or four fences and touched-down in an open, level paddock. The aircraft ran through the long grass and crossed a ditch — the pilot tried to pull the aircraft over the ditch but it hit the far side. This broke the nosewheel and the aircraft came to rest on its nose.

No fault could be found with the aircraft that would have led to the loss of power. The OAT (plus 25-30°C) and the dew point at the time (plus 20°C) represented a predicted risk of carby icing described as, 'serious icing — descent power'.

THE student pilot was almost ready for his licence test and had completed a solo and a dual trip that day. The student and his instructor refuelled the aircraft for another solo flight.

Sixty litres were added and the pilot calculated a total contents of 84 litres — which represented about four hours endurance without reserves.

The tanks were drain-checked for water.

The pilot took off for a period of circuits and completed about five touch-and-go's, the last of which was a short field landing.

During the subsequent takeoff, at about powerline height — the engine failed. The pilot pumped the throttle and the engine picked up. It failed again shortly afterwards and the pilot was committed to a forced landing.

He turned right and headed for what he assessed was the best paddock.

The pilot later recalled selecting carby heat on base as soon as rpm was below 2000 and he could definitely remember de-selecting it on final for the last landing. After touchdown he had reduced the flap to 10 degrees and applied full power. He was certain that the throttle was fully forward and that the engine was producing full power.

He also said that the fuel selector was not touched during the flight — it was left on the whole time. He noticed the oil pressure was in the green after the failure.

The aircraft had suffered two previous engine failures attributed to water in the fuel and it had previously been usual to find some water in the fuel samples during the drain check.

At the time of the accident the ambient temperature was plus 10°C and the dew point was plus 5°C. □

Peeper Keepers

This article follows one published in the winter 1987 edition — ASD 133, which outlined some of the visual problems associated with advancing years, especially presbyopia. Now it is hoped to give you some help to obtain the best multiple-focus glasses to enable you to fly more effectively and safely. This is in fact an abbreviated version of a booklet produced by the Department for optical prescribers. The authors were B.L. Cole and A.J. Vingrys of the Victorian College of Optometry, University of Melbourne.

ACQUIRING the best possible glasses requires co-operation between you and your lens prescriber. To do this you need to know what types of glasses are available and how to specify your cockpit environment and optical requirements.

Glass or plastic?

There are two main materials, crown glass and a plastic known as CR39. A very tough polycarbonate lens material is also available. All three lens materials are acceptable. CR39 and polycarbonate have these advantages:

- highly impact resistant
- light weight
- low thermal conductivity and less liable to fogging.

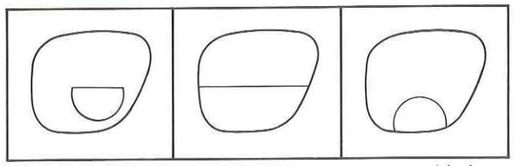
CR39 is more vulnerable to surface damage than glass and CR39 lenses must be carefully protected from scratching, especially during cleaning. CR39 can be obtained with an abrasion-resistant coating to reduce its susceptibility to surface damage.

As the basis for defining our requirements, let's define the viewing distances as follows:

- NEAR — for reading charts and maps
- INTERMEDIATE — for reading the main instrument panel
- DISTANT — for looking outside the aircraft.

What sort of bifocal?

The most common forms of bifocal are the round segment, the D segment and the executive or E-line.



D segment bifocal | Executive or E-line bifocal | Round segment bifocal

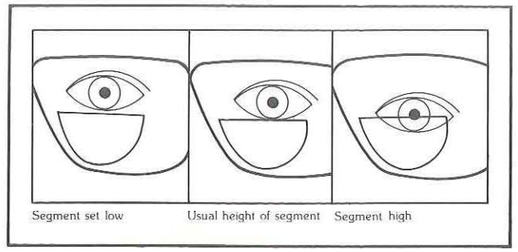
The straight-line transition of the D seg and E-line is an advantage especially for pilots who need to scan a wide horizontal array of instruments and these two forms of bifocal are therefore recommended.

Some people prefer the wider segment of the executive bifocals. The D seg bifocal is suitable and wide segment forms, 28 and 35 mm wide, are available. (The usual segment width is 25 mm, which gives a 45 degree field-of-view.)

The D segment bifocal provides clear, distant vision through the outer parts of the lens to the right and left of the near segment. This may be an advantage during takeoff and landing when peripheral visual information is needed.

Height of the bifocal segment

The near segment of the bifocal has to be set at the height to best suit the needs of the wearer. This is a critical judgment to be made by the prescriber. The pilot can help by giving valid (preferably measured) information about the position of his eyes in relation to the layout of the flight deck of his aircraft. If the segment is set too low, the head may have to be tilted back uncomfortably — in order to look through the near segment. If the segment is too high, it may interfere with distant vision or may require the head to be tilted forward — to avoid interference by the near segment.



If your presbyopia is at an early stage, you and your ophthalmic adviser have an important choice to make about the height of the near segment.

The height can be set so that you view the instrument panel through the near segment — as well as using it for charts and manuals at an ordinary reading distance.

Alternatively, the segment can be set low so that it is used only for charts, manuals and reading. When viewing the instrument panel you will look over the top of the near segment to use the distant part of the bifocal.

The choice will depend on:

- whether or not you are having any difficulty reading instruments on the forward instrument panel, and
- your residual accommodation (you need at least 2.75 to 3.5 Diopters of accommodation if you are to see the instrument panel clearly and comfortably through the distant part of the bifocals).

You should also bear in mind that if the segment is set low, the bifocals will not be very suitable for reading at home and you may need a separate pair of reading glasses or bifocals for everyday use.

How to nominate the segment height

Optometrists and spectacle dispensers are skilled at setting the segment height correctly, but flying is a demanding occupation and it may be worth spending a little more time than usual in defining your requirements.

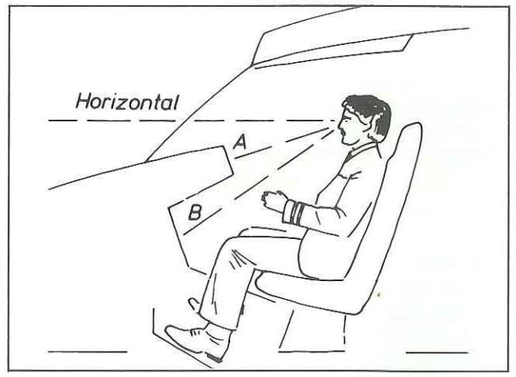
Before the lenses have been fitted to your chosen spectacle frame, I suggest that you take the frame away with you — to make some trials on segment height in your aircraft. With the spectacle frame correctly positioned on your face, sit in your usual seat and stretch transparent, adhesive tape across the frame so that the upper edge of the tape is at the height desired for the segment.

If you wish to use the near segment for viewing the instrument panel, the upper edge of the tape should be aligned with the glare-shield, between the instrument panel and the windscreen.

If the near segment is to be set low, for reading maps and charts but not the instrument panel, the tape should be set so you have an unimpeded view of the panel.

When making these observations, remember to:

- have the seat adjusted to its usual position, bearing in mind that pilots often adjust the seat to different positions in the different phases of flight
- adopt a normal body and head position — not too erect, as we tend to relax our posture during a long flight
- ensure that the spectacle frame is seated properly on your face.



The top of the segment should be aligned with the glare shield (A) when it is planned that the near segment is to be used for all near work including the forward instrument panel. When it is set so that the forward instrument panel is to be viewed by looking through the distant part of the lens, the segment height needs to be set to allow a clear view of the instrument panel (B).

Working distance

The next problem is to ensure that the glasses prescribed are suited to the particular near working distance imposed on you by the flight deck of your aircraft. This may not be a critical problem for your first pair of near glasses but it becomes increasingly critical as presbyopia progresses.

Near glasses have a limited range of clear vision which depends on the power of the lenses prescribed and your residual accommodation.

It is vitally important that the range of clear vision encompasses all the near objects that need to be seen clearly. Typically, this will range from the reading of maps and operations manuals at ordinary reading distances of 450 mm to the more distant parts of the instrument display which may be 750 to 1300 mm away.

Sit in the pilot's seat and have another person measure the distances between your eye and each near viewing distance. Make the measurements in millimetres and take them with you to your optometrist or ophthalmologist.

Make sure the seat is adjusted to its usual position and that you take account of the fact that you may use the seat in more than one position depending on the phase of the flight.

Usually the critical distances in order of importance, are:

- flight instruments
- engine instruments
- check lists (including EFIS and flight management displays)
- approach charts
- radios and navaids
- general charts.

The problem of the overhead panel

The overhead panel can be a problem both because it is overhead and because it can be very close to the pilot's eye. Such a close distance means that the presbyopic pilots will have difficulty seeing labels and numerals clearly. Yet in order to view through the near segment of bifocals or through look-overs, it is necessary to tilt the head back awkwardly. This can be a problem in some aircraft types. Don't forget, too, that some aircraft have placards and checklists attached to the back of the sun visors.

What are the possible solutions if the overhead panel proves to be a problem?

- the simplest solution is to lift up the bifocals (or look-overs) so that the head does not have to be tilted back so far
- flip-down spectacles can be provided with an additional lens power to clearly focus the overhead panel when viewing through the upper, distant part of the bifocal lens. However, flip-downs are cumbersome and they might be accidentally left in position, blurring distant vision. There is also a risk that they may flip down accidentally during some critical phase of flight
- there are vocational multifocals which have a near segment in the upper part of the lens as well as the usual near part in the lower part of the lens However, the position between the two segments is only 12 or 15 mm deep giving a vertical field-of-view of only 26° or 31° which pilots may find impedes their visual scan.
- a special multifocal can be constructed to provide a small near viewing segment in the upper part of the lens. This can be achieved by cementing an additional lens in the appropriate position or by special fabrication.

In general, the more complex solution should only be pursued if there is a substantial and persistent problem with the overhead panel.

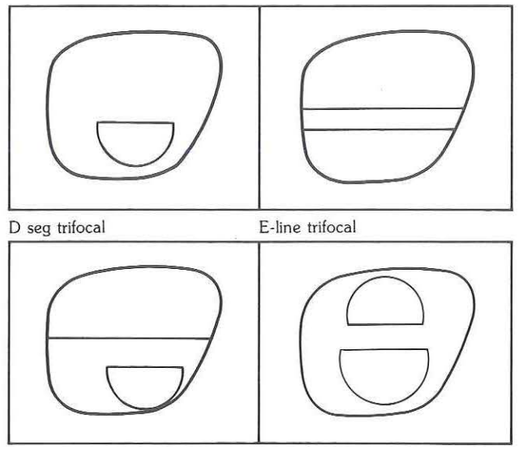
The overhead panel usually does not demand critical visual acuity and may not be used in critical phases of flight — so it may not present a serious problem.

Viewing distances to the overhead panel can vary from 380 to 700 mm depending on aircraft type and the part of the panel viewed.

The need for trifocals

As presbyopia advances, the power of the near spectacle correction must be increased to compensate for the further loss of accommodative power. As a result, the range of clear vision decreases.

When this occurs, trifocals are usually necessary. Trifocals provide an intermediate segment which has half the power of the lower near segment. The diagram shows how trifocals solve the problem.



(The power of the intermediate segment is usually half that of the near segment and focusses for intermediate distances.

The intermediate segment of trifocals is usually 7 mm deep (8 mm for the E/D). The E/D is also available with an intermediate segment 13 mm deep, but in a limited range of near additions. (Trifocals with non-standard intermediate segment depth can be specially fabricated.)

The figure shows the range of clear vision through the intermediate segment of trifocals of different power. It is evident from the figure that the intermediate segment gives clear vision over a wide range for the longer distances, sufficient to ensure clear vision of the instrument panel.

Trifocals are available in a D seg form, in an executive or E-line form and in a combined E/D form. All three types are acceptable. Of course, the executive form provides a wider horizontal field-of-view and might therefore require less frequent head movements.

The intermediate segment of the typical trifocal is about 7 mm deep. Since spectacles are normally located about 25 mm from the centre of rotation of the eye, the vertical field-of-view through the typical intermediate segment, is about 15 degrees. At a distance of one metre this means a vertical distance of about 280 mm is seen clearly through the intermediate segment. This may be too limited for a complex instrument panel extending some distance below the windscreen — although head movements can compensate for this limited field-of-view.

It can also be argued that during an approach and landing, the pilot's visual tasks involve alternating between scanning the instrument panel and viewing outside the aircraft. Reading maps and manuals at close distance, say 450 mm, occupies less time and is usually done during less demanding phases of flight. If this is the case, then for flying, the distant and intermediate segments of trifocals may be more important than the near segment.

So for pilots, it may well be an advantage to increase the size of the intermediate segment at the expense of the near segment.

The E/D trifocal has a slight advantage in this respect. Its intermediate segment is 8 mm deep giving an 18° vertical field compared to 15° for the standard trifocal. In addition, the intermediate segment surrounds the D shaped near segment.

The E/D occupational trifocal gives a deeper intermediate segment (13 mm) but is only available in a limited range of near additions. Trifocals with wider intermediate segments can be specially fabricated but at additional cost.

If standard lenses are to be used, the E/D may be the optimum trifocal for pilots.

Prescription sunglasses

Glare is often a problem when flying above cloud or when flying into the sun.

Clip-on sunglasses can be obtained to clip over bifocals or trifocal glasses and can be quickly removed when there is a sudden transition from glare conditions to relatively dark conditions — as can occur during a descent. They have the further advantage of being inexpensive.

Getting used to it all

The need for bifocals or trifocals is a reminder that the years are passing. Comfort yourself with the thought that you are not alone — everyone eventually faces the same problem. After all, life begins at 40 and you have the benefit of maturity and experience. At least the solutions to the visual problem, although not good enough to restore youthful vitality to the accommodative mechanism of your eye, are simple and innocuous. You do get used to the idea of wearing glasses, nuisance that it may be.

But then you get your first pair of bifocals. You may find this a little disturbing at first. Your first reaction might be that you cannot tolerate them. But persist. After a week or two, you will no longer notice the reading segment and you will switch from the distant part to the near segment without noticing that you have done so.

Make sure your bifocals are kept in good adjustment because if they are not, they will not work as well nor be as comfortable as they should be. Return them to your optometrist or dispenser whenever you need to have them readjusted. Never adjust your own spectacles.

Finally, look after your glasses. Keep them clean and free from dirt and grease. Make sure the lenses do not get scratched. Scratched and dirty lenses can obscure your vision in bright or glare conditions just as can a dirty windscreen.

To get the best glasses requires co-operation between yourself and your prescriber. The check list below is a starting point but seek the advice of the lens prescriber.

Perhaps your flying life need no longer be 'Through a Glass Darkly'!! □

WORKING DISTANCE CHECKLIST*

Working distance (m)	Locations†	Nearest Distance	Farthest Distance
Flight instruments			
Engine instruments			
Checklists			
EFIS flight management display			
Approach charts			
Radio			
General charts and manuals			
Other			

†Location may be forward instrument panel (FIP), central instrument panel (CIP), central console (CC), overhead panel (OP), glare shield (GS), control column (C).
*It would be useful if pilots completed this table prior to their eye examination.

AIRFLOW

Feeling a little query?

The AIRFLOW column is intended to promote discussion on topics relating to aviation safety. Input from student pilots and flying instructors is particularly welcome.

Anonymity will be respected if requested. 'Immunity' applies with respect to any self-confessed infringements that are highlighted for the benefit of others.

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Yours sincerely, ...

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Aircraft accident reports

Third quarter 1987

The following information has been extracted from accident data files maintained by the Bureau of Air Safety Investigation. The intent of publishing these reports is to make available information on Australian aircraft accidents from which the reader can gain an awareness of the circumstances and conditions which led to the occurrence.

At the time of publication, many of the accidents are still under investigation and the information contained in those reports must be considered as preliminary in nature and possibly subject to amendment when the investigation is finalised.

Readers should note that the information is provided to promote aviation safety — in no way is it intended to imply blame or liability.

Preliminary reports

The following accidents are still under investigation

Fixed Wing

18 Oct, CESSNA 182 A, VH-WCG, Sport parachuting, ARATULA QLD
The pilot was conducting his first drop of parachutists and also his first takeoff from this strip. The strip was rough and the pilot, being concerned that unnecessary stress may be placed on the nosewheel, raised the nose early in the takeoff run. The aircraft became airborne after a ground roll of about 350 metres in a nose high attitude at an indicated airspeed of 50 knots. Almost immediately the left wing dropped and the aircraft turned to the left with the rear fuselage and mainwheels coming into contact with the ground. The aircraft continued under full power beyond the end of the strip striking two logs and a sapling before coming to rest embedded in a large felled tree.

20 Oct, CESSNA A188B A1, VH-EUU, Aerial agriculture, INNISFAIL QLD
The pilot was carrying out aerial spraying on a banana plantation in hilly country. As he was completing the clean up run, along one side of a section of the plantation, the aircraft struck a set of powerlines which ran diagonally across the flight path. It subsequently struck the ground in a nose down attitude and apparently caught fire on impact.

29 Nov, CESSNA R172 K, VH-UDU, Non commercial — pleasure, GATTON QLD
Having just completed a short flight with the President of the local aero club onboard, the owner of the aircraft offered to allow another pilot, who had also been on the aircraft during the flight, the chance to carry out a circuit. After changing control seats, the pilot completed a circuit and witnesses reported that the subsequent landing was very heavy. The aircraft bounced into the air to about 20 feet, power was applied and it was observed to climb slowly, in a high nose attitude, to about 80 feet above ground level. It then entered a skidding turn to the left through 180 degrees to be heading in a downwind direction. The witnesses stated that the flaps remained in the fully down position and aircraft appeared to be laterally unstable until at an altitude of about 50 feet, the left wing and nose dropped suddenly and the aircraft impacted the ground.

07 Dec, RUTAN VARI EZE, VH-EZH, Non commercial — pleasure, GLADSTONE QLD
At the commencement of the final approach the aircraft was positioned above the normal approach profile with a higher than normal airspeed. The pilot reported that the correct airspeed and approach profile was regained but that he was slow with the use of power to correct the rate of descent. The aircraft subsequently landed heavily on the mainwheels and when the nosewheel contacted the runway the nosegear leg failed.

22 Dec, AYRES S2R-R1820, VH-HGT, Aerial agriculture, MUNGINDI QLD 8N
The pilot reported that he had completed the spraying of one area and while waiting for the markers to move to the next area, he completed two short runs in the vicinity of two sets of powerlines. When he commenced the next long run the fin of the aircraft struck one of the powerlines. The impact resulted in the pilot experiencing difficulties in controlling the aircraft so he decided to land the aircraft in the paddock, rather than return to the departure strip. During the landing roll the aircraft ran through two fences before coming to rest nose down in a gully.

26 Oct, BEECH 58, VH-EZG, Training, BANKSTOWN NSW
The flight was part of a type endorsement. After completing the upper air sequences five circuit and landings were carried out without incident, although the fifth landing was reported as being heavier than normal. On the downwind leg of the next circuit, both pilots reported that the gear was found to be still extended when the pre-landing checks were commenced. When the aircraft subsequently touched down the left maingear began to collapse. The instructor assumed control and attempted to keep the aircraft straight along the runway. However, the aircraft veered to the left and the nosegear collapsed prior to the aircraft coming to rest, ten metres off the side of the runway.

31 Oct, PIPER 32-R301, VH-WIV, Non commercial — pleasure, GRIFFITH NSW
The aircraft was observed to descend rapidly, in a high nose attitude, during the later part of the approach. It struck the ground heavily and the right maingear collapsed.

09 Nov, BEECH 95 B55, VH-EHN, Charter — cargo operations, BREWARRINA NSW
The pilot reported that as full power was applied on the takeoff run he heard a loud bang, and the aircraft yawed to the right. He shut down the right engine and brought the aircraft to a stop.

An inspection of the aircraft revealed that the right propeller assembly had failed at the hub. One blade had separated from the hub and struck the nose section of the aircraft. The blade becoming dislodged resulted in an out of balance situation which caused the crankshaft to shear behind the attachment flange.

10 Nov, DE HAV C2, VH-IMJ, Activities Associated with Aerial Agriculture, GLEN INNES NSW
The aircraft was being operated from a strip with an excessive longitudinal gradient, and takeoffs were being conducted with a two to three knot tailwind. It was reported that

on the sixth takeoff of the day that a strong wind gust substantially increased the tailwind. The aircraft did not become airborne as expected and the pilot is reported to have pulled the hopper handle in an attempt to reduce the weight of the aircraft, and clear the boundary fence. The load failed to dump normally. The pilot applied more flap and the aircraft lifted off in a tail-low attitude. The mainwheels cleared the fence but the tailwheel struck a fence post. The aircraft remained airborne and the pilot subsequently landed it without further incident at Glen Innes aerodrome, a distance of about four kilometres from the point of takeoff.

19 Nov, BEECH V35, VH-CFH, Non commercial — pleasure, CASSILIS NSW 1N
The aircraft was cruising at 10,000 feet amsl on a Night IFR flight when the passenger, who is a part owner of the aircraft, noticed the manifold pressure drop two inches. The engine rpm also dropped and the pilot changed fuel tanks, switched on the fuel boost pumps and moved the throttle and pitch controls to the fully forward position. At about the same time the manifold pressure and engine rpm readings reportedly dropped to zero. The aircraft was set up in a glide and despite several attempts engine power could not be restored. The pilot tracked the aircraft towards Cassilis and descended over the town before taking up a westerly heading in preparation for landing. At about 20 feet above the ground the aircraft struck a tree and then landed heavily on a steep bank.

An inspection of the engine found that the crankshaft had failed.

05 Dec, FAIREY AS-6, VH-HMW, Test, CAMDEN NSW 1N
The aircraft had been out of service for several months, undergoing engine maintenance. This was the first flight following the completion of that maintenance. After takeoff the aircraft was observed to climb to about 1500 feet, trailing black smoke. It then turned towards the airfield and began to lose height rapidly until descending out of view behind trees. The aircraft touched down heavily, tail first, in a paddock, bounced and following the second touch down slewed sideways through a fence and down an embankment.

An inspection of the engine revealed that both the right and left camshaft inclined drive upper bevel shaft gears had been overheated as a result of a lack of lubrication. The distortion of the left drive was sufficient to disconnect it from its camshaft drive bevel gear resulting in the subsequent loss of power.

The engine was fitted with an external oil priming system to lubricate the camshaft drives during and immediately after starting. This system was connected on each side into the appropriate valve train oil supply by 'T' fittings and flexible hose assemblies. During reassembly, associated with the latest engine maintenance, the 'T' fittings were omitted and the fittings in the front case drillways were blanked with plugs, effectively cutting off the engine oil supply to the camshaft drives.

22 Dec, SMITH 600, VH-IGV, Charter — cargo operations, CASSILIS NSW 11E
The aircraft had been chartered to carry freight to Coolah. The pilot was accompanied by a friend who was also a pilot but not endorsed on this aircraft type. The flight apparently proceeded normally and about 18 minutes before the estimated arrival time at Coolah the pilot reported that a descent from cruising level had been commenced. Witnesses, located some 55 kilometres from the destination, observed the aircraft flying at about 1000 feet above the terrain and performing a series of turns until it entered a spiral descent, then a steep dive, before impacting the ground.

13 Oct, PIPER PA25-235, VH-HMC, Aerial agriculture, DONALD VIC 10E
During the pull up at the end of a clean up run, a small note pad fell to the floor of the cockpit. The pilot leant forward to retrieve it but almost immediately the aircraft struck the ground.

18 Oct, AIRBUS A300, VH-TAC, AIRLINE TRANSPORT, MELBOURNE VIC
During the landing roll on Runway 27, the Aerodrome Controller noticed smoke issuing from the left maingear assembly. He advised the pilot of this as the aircraft entered the taxiways, and the pilot confirmed that he had a hot wheel indication in the cockpit. The fire services were summoned and followed the aircraft on its taxi path. Just after the aircraft crossed Runway 34, the Surface Movements Controller advised the pilot that fire had broken out in the left maingear. The aircraft was brought to a halt and the fire was extinguished using the rapid intervention vehicles. The pilot ordered an evacuation of the aircraft and the injuries were sustained during the evacuation.

Investigation to date has revealed that the overheating which led to the fire was due to continuous application of the brake on No.2 wheel. This condition resulted from a short circuit in an electrical solenoid of the anti-skid unit that controls the brake for that wheel.

This occurrence was upgraded from incident to an accident on receipt of advice that some of the injuries sustained were serious.

02 Nov, PITTS S1E, VH-XII, Non commercial — practice, WHITSTOCK FIELD
After making two touch and go's, the pilot decided to make the third landing a full stop. At the end of the landing roll the aircraft commenced a ground loop to the left. Despite the application of full power, directional control could not be regained and the aircraft entered an area of small saplings to the left of the strip, and overturned. The landing direction was to the northeast and the prevailing wind was a northerly, which resulted in a crosswind component of approximately 10 knots.

03 Nov, CESSNA 175, VH-WAR, Non commercial — pleasure, LEONGATHA VIC 13SSW
The pilot was departing to the southwest from his property strip in conditions of strong and gusty northwesterly winds. At about 200 feet agl, the aircraft experienced difficulty maintaining positive climb. Strong downdrafts generated by the high terrain ahead resulted in the aircraft descending to 100 feet agl whilst in the climb attitude with full power applied to the engine. The pilot realised he could not outclimb the terrain and picked an open area just to the right of his track in which to land. The landing gears were dislodged when the aircraft contacted the soft surface of that landing area.

08 Nov, PIPER 32 300, VH-WGO, Non commercial — pleasure, WOODEND VIC 5ENE
As the nose was raised at the end of the take-off run on the 650 metre long property strip, the pilot reported that the engine miss fired and lost power. Although the engine recovered, the pilot was not certain that it was producing full power and so elected to abandon the take-off attempt. In an effort to clear the fence at the end of the strip the pilot applied back pressure on the control column but the noseleg failed to clear the top railing. The noseleg collapsed during the subsequent ground roll.

11 Nov, CESSNA A188 A1, VH-KQB, Aerial agriculture, ELMORE VIC
The take-off attempt was made in conditions of left crosswind. When the tailwheel left the ground at about 25 knots, the aircraft swung left but the application of right brake and full right rudder failed to correct the turn. The pilot closed the throttle and the aircraft completed the ground loop which resulted in the collapse of the right gear leg.

16 Nov, PIPER 25 235, VH-AMZ, Aerial agriculture, ECHUCA VIC 8SSE
The pilot was spraying a tomato crop and had been briefed by the farmer as to the location of powerlines near the area to be treated. Towards the end of the job the pilot positioned to once again fly under a powerline, but struck another powerline 80 metres from the one he was intending to fly beneath. He was unaware of the presence of that line. The aircraft impacted the ground and was consumed by the resulting fire.

The pilot had not treated that paddock previously and had not performed a pre-treatment ground inspection of the job.

20 Nov, CESSNA A185 F, VH-TLO, Non commercial — pleasure, SILVAN RES VIC
After take-off from a property strip near the Silvan Reservoir, the aircraft was flown at a low height above the calm, smooth surface of the water. A left turn was completed at low level, but shortly thereafter the aircraft struck the surface near the middle of the dam. On initial contact, water entered the front of the cabin and the engine ceased running. The aircraft then bounced back into the air and the pilot attempted, unsuccessfully to re-start the engine. The aircraft lost height and skidded along the surface to a halt before the nose began to sink. The three occupants evacuated the aircraft but only one passenger succeeded in reaching the shoreline.

Until the aircraft struck the surface of the reservoir, there was no indication of engine or control problems.

24 Nov, PEREIRA OSPREY 2, VH-LII, Test, CAPE LIPTRAP 5ENE
At a height of about 50 feet on initial climb, the aircraft suffered a birdstrike which resulted in the canopy being broken. Although the pilot's vision was inhibited by the effects of windblast, he was able to return for a landing. After the engine was shut down the pilot heard a noise, determined that the aircraft was on fire and vacated just before it was totally consumed. It is likely that as a result of the birdstrike, a fuel line was damaged which allowed fuel to spray onto the hot engine/exhaust area.

04 Dec, TRANSAV PL12-T300, VH-AUL, Aerial agriculture, DEVONPORT TAS 5E
During the clean up run, after spraying a crop of potatoes, the engine suddenly lost power. The pilot selected the right tank and turned the fuel boost pump ON, however the engine failed to respond. The aircraft struck the ground, collapsing the right main gear.

The pilot stated that prior to take-off he checked the quantity of the inboard fuel tanks. He took-off with the left tank selected, which contained 23 litres of fuel, intending to change to the full right tank prior to starting the spraying. He omitted to change tanks as planned and the engine failed due to fuel exhaustion even though the right tank was full.

Investigation is continuing into the failure of the engine to re-start after the full tank and boost pump were selected.

11 Dec, CESSNA 172-P, VH-RWV, Instructional — solo (supervised), CAMBRIDGE TAS
The pilot was carrying out a period of solo circuits as part of a check on the aircraft type. Following the third circuit, the aircraft was observed to approach and land normally into the 10 to 15 knot headwind. During the subsequent landing roll, while still travelling at about 30 knots, the aircraft veered suddenly to the left. The pilot applied full right brake and rudder and then both brakes in an attempt to stop the aircraft. However, before the aircraft stopped it struck one of the boundary fence posts.

An inspection of the aircraft did not reveal any mechanical defects that could have contributed to the occurrence, and the pilot was unable to explain the reason for the loss of directional control.

24 Dec, CESSNA 180, VH-MPW, Non commercial — pleasure, MOORABBIN VIC
The pilot reported that after touchdown the aircraft encountered a strong gust of wind from the right. The aircraft swung suddenly to the right and the pilot was unable to maintain control. The left maingear leg bent and the airframe distorted, allowing the left door to become dislodged. The aircraft finally came to rest off the side of the runway, having groundlooped through 130 degrees.

11 Oct, PIPER 23-250, VH-ESA, Non commercial — pleasure, OODNADATTA SA
After refuelling, the pilot started the left engine normally but was unable to start the right engine. The starter was engaged a number of times but the engine would not maintain idle RPM. The pilot's son approached the aircraft and advised that a fire had broken out in the right engine bay. The engines were shut down immediately but not before the fire had caused substantial damage to that bay.

09 Nov, CESSNA 404, VH-ANM, Charter — passenger operations, PEPPERMINARTI NT
After landing, the aircraft was backtracked on the runway to enter the apron area when the nosegear collapsed. The pilot reported that at the time of the collapse the aircraft was moving at about 4 knots because he had slowed to take the turn into the apron. He said that there was no unsafe indication and that he had not inadvertently raised the gear when he retracted flap.

23 Nov, CESSNA 172-P, VH-FCQ, Training, DELISSAVILLE NT
The student was carrying out a practice forced landing on Delissaville strip as part of a pre-licence test. After the student had initiated the flare for landing, the instructor became aware of a high descent rate but too late to prevent a hard landing. The instructor took over control, carried out a touch and go, then advised the student to return to Darwin. Inspection there revealed that the aircraft had suffered substantial damage as a result of the hard landing.

12 Dec, AMER AIR 5, VH-ETT, Non commercial — pleasure, PORT LINCOLN 14NW
The aircraft touched down 385 metres into the 675 metre long paddock. The pilot applied the brakes but reported that they did not slow the aircraft. He decided that insufficient area remained for a successful go-around to be carried out and attempted to steer the aircraft through a gate. The right wing struck the gate and the aircraft turned through 190 degrees before coming to rest.

22 Dec, CESSNA 402-C, VH-TFD, Scheduled passenger service, NGUKURR NT
After a reported normal touchdown, the aircraft was allowed to roll through to the end of the runway before commencing a left turn to backtrack the runway. During the turn the right maingear collapsed.

An inspection of the aircraft revealed that the right maingear leg actuator had failed.

01 Nov, BEECH A36, VH-RCS, Non commercial — business, KARAWARA WA
As the aircraft approached Jandakot the pilot noticed that the engine RPM was increasing, and he was unable to control it with the propeller control lever. He partially closed the throttle which enabled him to regain control over the engine. A straight in approach to Jandakot was planned, but just after the power reduction, the engine began to make unusual noises and the cockpit filled with smoke. The pilot decided to make a forced landing on some playing fields he had just overflown, but on approach he observed that they were in use. He modified his approach to land on a nearby, vacant rubbish tip and after touchdown the aircraft collided with a mound of earth and overturned.

Investigation revealed that there was no oil in the engine as it had leaked overboard during the flight. This lack of engine oil caused the propeller overspeed and internal failure of the engine.

09 Nov, CESSNA 210 N, VH-CWN, Non commercial — pleasure, ERONG SPRINGS WA
The aircraft was hired at Parafield for a holiday through the north west of Australia. The pilot noticed that during the roll out after landing, the aircraft tended to drift to the left. He modified his approach technique, by using different speeds and flap settings, because he thought the veering was pilot induced. During the landing at Erong Springs, the pilot allowed the aircraft to roll for a short distance unimpeded by brakes, and then retracted the flaps. Almost immediately, the aircraft veered sharply to the left off the flight strip and collided with a large mulga tree before control could be regained.

Advice has been received that the aircraft may have been involved in an unreported heavy landing just prior to it leaving Parafield.

Rotary Wing

02 Oct, HILLER UH12-E, VH-FFT, Commercial, GEORGETOWN Q 80NE
The aircraft was cruising at an altitude of about 300 feet above ground level when the pilot heard a loud bang followed by a vibration. The engine continued to operate for about two to three seconds, before stopping. Because of the unsuitable terrain, over which the aircraft was flying, the pilot was forced to attempt a landing into trees and the aircraft rolled on its side.

An inspection of the engine found that the number 3 connecting rod had failed.

21 Nov, ROBINSON R22, VH-HBG, Non commercial — pleasure, DALBY QLD 48W
After taking delivery of his new helicopter the pilot carried out an acceptance flight and reported to maintenance personnel that the collective control felt stiff. He was assured that this was normal for an aircraft that was new. The following morning the pilot decided to take two of his relatives for a short flight around their property. Near the completion of the second of these flights, as the aircraft was descending through 200 feet for landing, the rotor rpm warning horn sounded. The pilot stated that he chose an area on which to land, increased the throttle setting and slightly lowered the collective. The aircraft struck the ground at a forward speed of about 40 knots on the heel of the both skids and the tail rotor. It then skidded, rocked forward and the main rotor severed the tailboom before the helicopter turned through 180 degrees and came to rest on its right side. Both occupants evacuated the wreckage, the passenger suffering bruising as the result of contact with emergency locator beacon that was mounted between the two seat backrests.

24 Nov, BELL 206 B, VH-FJB, Charter — passenger operations, CAIRNS QLD 95SW
The helicopter was engaged in the transport of personnel for stream sampling operations. The pilot was to pick up one of the samplers from an area that was sloping. To achieve the pick up he manoeuvred the helicopter so that the left skid was resting on a slab of rock and the right skid was still in the air. Prior to the passenger boarding the aircraft, the pilot adjusted the position of the skid on the rock and the right skid contacted a tree stump. The helicopter subsequently rolled onto its side but both occupants escaped without injury.

29 Oct, ROBINSON R22, VH-JVC, Instructional — solo (supervised), JANDAKOT WA
After take-off, the pilot noticed a vibration in the airframe and immediately returned to land. Once on the ground he decided that the vibration was too bad to continue so he shut down the engine. When he pulled the mixture control to the idle/cut-off position, he felt the main rotor impact the tail boom. Inspection showed that one main rotor blade had slashed the tail boom. Strong, gusty wind conditions were prevalent at the time of the occurrence.

10 Nov, BELL 206-B, VH-AZH, Non commercial — aerial application, MT MAGNET WA 78S
Due to a loose seat belt banging against the fuselage of the helicopter, the pilot slowed the aircraft and commenced an approach to land as soon as possible. Shortly after commencing the approach, the rate of descent increased rapidly and the pilot's application of collective pitch to correct the situation further increased the descent rate. During the approach, both the audio and visual annunciators indicated that the engine had failed. The pilot lowered collective but then had to flare as the aircraft was about to impact a small mulga tree. The aircraft cleared that tree but was damaged as a result of a collision with a nearby tree.

Gliders

31 Oct, SCHLEICHER K7, VH-UKY, Non commercial — pleasure, GULGONG NSW
The pilot was attempting to complete a solo flight of at least one hour duration as part of the qualification for the issue of a C Gliding Certificate. Witnesses reported that during the winch launch, the glider lifted off too early and at too low an airspeed and then assumed a climb attitude. The pilot stated that she released from the launch when she became aware that the airspeed was too low. At about the same time the right wing dropped and the aircraft turned through 540 degrees before impacting the ground with the right wingtip.

02 Nov, GLASFLUGEL MOSQUITO, VH-GML, Non commercial — practice, CORRYONG NSW 47E
After about four hours flying, the pilot decided to return to Corryong to land. Because the aircraft was too low he tracked towards a valley in an attempt to find lift. The attempt was unsuccessful and the pilot selected a sloping area on which to carry out an outlanding. Shortly after touchdown one wing struck a small bush and the aircraft groundlooped.

20 Dec, ICA IS28 B2, VH-GII, Instructional — dual, BENALLA VIC
After completing some upper-air work, the circuit was entered with the student pilot at the controls. During the final approach full airbrake was selected and a flare for landing commenced. The flare was high and the instructor took control of the aircraft. However, the aircraft contacted the ground heavily before any remedial action could be taken.

Ultralights

21 Nov, ULTRLIGHT, NOT REG, Non commercial — pleasure, BULGA NSW

The owner pilot had recently recovered his aircraft with new fabric, and is reported to have taxied it up and down the strip for a couple of hours before taking off. About 15 minutes after the aircraft became airborne, a witness reported that he heard a loud bang, followed by the engine noise stopping, and then observed the aircraft spirally toward the ground. The aircraft impacted in an inverted attitude in a creek.

05 Dec, SAPPHIRE ULTRALIGHT, NOT REG, Non commercial — pleasure, BANGHOLME VIC
The pilot was reported to be manoeuvring the aircraft for landing when he encountered a wind gust. This resulted in the aircraft striking a tree, after which it crashed to the ground.

Final reports

The investigation of the following accidents has been completed

Fixed Wing

07 Oct, BELLANCA 8 KCAB, VH-CCC, Instructional — dual, ARCHERFIELD 30S, Senior commercial, 13000 hrs
During a period of dual training, the instructor noticed that the oil temperature was rising to an undesirable level and that the oil pressure was falling. He elected to carry out a precautionary landing on a short, disused agricultural strip, rather than flying 20 minutes back to the aerodrome. The student was to carry out a short field landing under the supervision of the instructor, who was to talk her through the exercise. At about the point of touchdown, the press-to-talk switch in the rear pilot compartment failed and the student was unable to hear any further instructions. She became apprehensive about the length of strip remaining and applied heavy braking, which the instructor was unable to overcome, and the aircraft nosed over.

An inspection of the aircraft revealed that a cleaning rag, which had been missed during the daily inspection, had partially covered the oil cooler, rendering it less effective.

09 Oct, CESSNA 172 N, VH-MSJ, Non commercial — pleasure, MAROOCHYDORE QLD 28WSW, Private, 00155 hrs
The pilot stated that during the flight the cloud base gradually lowered until he found himself in a valley with the cloud on the hilltops. The cloud also closed in behind the aircraft and the pilot decided to find a suitable area and land. He selected an area with some fences running through it and landed the aircraft. During the landing roll the tail section of the aircraft struck a fence post.

12 Oct, CESSNA U206 F, VH-SKZ, Non commercial — pleasure, ESCOTT ST QLD, Private, 00080 hrs
The pilot reported that while taxiing after landing the engine began to run roughly and stopped. He started the engine again and continued taxiing to the fuelling depot. After refuelling, the pilot carried out a fuel drain, removed and replaced the spark plugs, which were found to be clean, and started the engine. He completed an engine check and found that the engine ran roughly at idle but ran smoothly when operated at higher RPM. Shortly after takeoff, as the pilot was setting climb power, the engine failed. He was forced to carry out a landing on unsuitable terrain, and during the landing roll the nosegear broke off.

An inspection of the engine found that the throttle to fuel control unit link rod assembly had become disconnected at the fuel control unit end following the loss of a split pin. This resulted in a mismatch between the internal position of the fuel control unit and the position of the throttle butterfly which was set by the pilot when he moved the throttle lever. The fuel control lever had apparently vibrated to a position where insufficient fuel was available to the engine to sustain engine power.

24 Oct, CESSNA 177, VH-DZI, Non commercial — pleasure, BUNDABERG QLD 55W, Private, 00414 hrs
The pilot reported that the windsock at the strip indicated a gusty 30 knot headwind and that he conducted the approach with full flap down and considerable power applied. As he closed the throttle and flared, the aircraft suddenly rolled to the right and dropped to the ground impacting nose wheel first. Later inspection revealed that the nose wheel leg mount had been broken and that the lower firewall and cabin floor had been damaged.

Air mass thunderstorms were present in the area at the time of the accident and witnesses at the strip reported a particularly strong gust of wind exceeding 40 knots at the time of the accident. The wind direction was reported to have changed through 90 degrees shortly after the accident.

This accident was not subject to an on-site investigation.

26 Nov, MAULE M5 235C, VH-MEO, Non commercial — aerial ambulance, SPRINGFIELD ST, Private, 00150 hrs
The pilot received a request at 5am from a neighbouring property to fly a seriously ill person to a hospital some 150 kilometres away. During the approach to the property strip the pilot realised that the aircraft was too high and too fast so he attempted a sideslip to lose altitude. The aircraft floated the full length of the strip before the pilot decided to go around. During the go-around the aircraft stalled at about 50 feet above the ground after the pilot had commenced a steeply banked climbing turn to avoid trees.

09 Oct, PIPER 28 140, VH-CNL, Instructional — solo (supervised), CESSNOCK NSW, Student, 00036 hrs
Following a normal approach for landing during a period of solo circuits, the aircraft touched down heavily and bounced. Attempts by the pilot to recover from the bounced landing resulted in a second more accentuated bounce. Recovery from the second bounce was not effected and the aircraft impacted the runway in a nose low attitude.

No pre-existing defects were found which could have contributed to this occurrence.

15 Nov, PIPER 22 150, VH-AUX, Non commercial — pleasure, BAROOGA NSW, Private
The pilot had arranged to meet his son at the Barooga airstrip. Although he had overflown the strip on several occasions he had never previously operated into the strip. After arrival, he was requested to take some friends for scenic flights over the local area. On final approach, on the second of these flights, the aircraft struck powerlines which were strung across the eastern end of the strip, about 85 metres prior to the threshold. The aircraft struck the ground in a nose down attitude 25 metres beyond the powerlines and came to rest inverted.

The pilot was unaware of the existence of the powerlines and had not sought the owner's approval or ascertained the strip condition and dimensions before commencing the operation. The poles supporting the powerlines were adjacent to tall trees which resulted in them being difficult to see. Also, it was late afternoon and the approach was being conducted into the west.

24 Nov, VICTA 100, VH-MUQ, Non commercial — pleasure, SYDNEY NSW 8N, Private, 03500 hrs
The pilot had flown the aircraft from Archerfield to Sydney earlier in the morning. It was his first long flight in the aircraft since purchasing it four months previously. He reported that the fuel tank had been filled to capacity on the day prior to departure from Archerfield, and during the flight he had used the correct mixture leaning technique.

On arrival at Sydney the pilot calculated there was adequate fuel for the flight to Camden and noted that the fuel gauge indicated "10 gallons". Twelve minutes after takeoff the engine lost all power. The pilot was then forced to attempt a landing on a sports oval. The aircraft touched down in the centre of the oval and ran through the boundary fence and over an embankment before coming to rest.

An inspection of the wreckage revealed that the engine had failed after all the usable fuel had been exhausted. The fuel tank was subsequently filled to capacity and it was found to hold only 119 litres, instead of the 132 litres specified in the Aircraft Flight Manual, although the pilot believed the tank capacity to be 159 litres. This reduction in tank capacity had been caused by creases in the bladder fuel tank, and it is also likely that the fuel gauge overread as a result of the creased bladder.

07 Oct, PIPER 23 250, VH-WGN, Charter — passenger operations, KIMBA SA, Commercial
After landing, as the aircraft turned left into the taxiway, the left maingear collapsed. Inspection revealed that the drag link centrebolt had failed.

Examination of the bolt revealed that it had failed due to fatigue, which had initiated from pit corrosion along the shank of the bolt. It also displayed signs of in-service wear which possibly contributed to the failure. This aircraft reportedly operated from rough, uneven dirt strips on a regular basis.

12 Nov, CESSNA 150 B, VH-RWM, Non commercial — pleasure, KOOKYNIE WA, Private, 02400 hrs
As the aircraft was being flared for the landing, a mob of sheep ran onto the strip. Two sheep were hit by the aircraft, one being thrown up against the left flap and the other struck the right tailplane. The landing was completed without further incident.

The strip was not fenced off from the rest of the paddock and the pilot did not see the mob as he approached to land.

Rotary Wing

17 Dec, HILLER UH12-E, VH-FXX, Aerial agriculture, AYR QLD 6NE, Commercial 06450 hrs ,

Prior to commencing operations in the area the pilot carried out an aerial reconnaissance to check the location of powerlines. He stated that he had almost completed the second load when he had the feeling that he was running out of chemical. He believes that he momentarily looked at his instruments to check for pressure and load remaining and temporily forgot about the presence of the powerlines. He subsequently saw the powerlines as the aircraft was approaching the end of the run, just before they were struck by the canopy of the helicopter. Control was maintained with difficulty, and when the pilot noticed that the aircraft was trailing wires he decided to land. The landing in a cleared paddock was heavy, causing the skids to col-

lapse, and the main rotor to flex downwards, striking the tailboom and severing the tail rotor.

The pilot stated that the powerlines were difficult to see because of wire sag and the backdrop of trees and buildings.

This accident was not the subject of an on-site investigation.

Gliders

30 Oct, SZD 32A FOKA 5, VH-GEF, Non commercial — pleasure, OAKEY QLD 6W, Glider, 00087 hrs
The aircraft was on the last leg of a cross country flight when an area of sink was encountered. The pilot was forced to make a landing in a paddock. During the subsequent landing roll the aircraft struck a concealed rock which resulted in the fuselage breaking just forward of the tailplane.

Final updates

The investigation of the following accidents has been completed. The information is additional to or replaces that previously printed in the preliminary report

Fixed Wing

04 Jul 86, CESSNA 172 F, VH-DNU, Senior commercial, YARALLA STN QLD, 12700 hrs
The pilot in command was continuing a mustering endorsement which had been commenced the previous day. After flying for about 85 minutes the pilots stopped for a break of some 30 minutes. About 75 minutes after flying had recommenced a person on the ground heard a thump, and the wreckage of the aircraft was discovered shortly afterwards. It had struck the ground in a steep nose down attitude while spinning or turning to the left, about 270 metres to the south of the 30 strip.

Investigation revealed that, at some stage prior to the final impact with the ground, the undersurface of the left wing had contacted the ground, causing left aileron failure followed by a loss of controllability. Medical evidence indicated that the pilot may have suffered a partial or complete loss of consciousness due to a pre-existing heart condition. However, it could not be determined whether this was a factor in the accident.

06 Jul 86, AMER AIR 5 A, VH-SYX, Private, TANGALOOMA QLD, 00183 hrs
The first takeoff attempt towards the South was abandoned because the pilot was uncertain whether the aircraft would become airborne in the distance available. He noted that the windsock indicated calm conditions, and after completing another engine run, elected to take-off towards the North. However, the windsock was sheltered from the prevailing wind and did not indicate the five to seven knot tailwind existing for the initial part of the takeoff. Full power was applied before the brakes were released, however acceleration appeared to be uneven, reducing as the wheels passed through soft areas on the strip. The aircraft struck a fence shortly after lift-off, and touched down in a nose-high attitude. It then bounced several times, struck a mound of sand and debris, and overturned.

The investigation established that with the tailwind and soft wet surface conditions existing at the time there was insufficient runway length available. The pilot recognised the slow acceleration of the aircraft, but delayed his decision to abort the takeoff attempt.

07 Dec 86, CESSNA 172 N, VH-MJJ, Private, TOOWOOMBA QLD, 00351 hrs
The pilot had taken part in a flour bombing and balloon bursting competition and was returning to land. The front seat passenger was a flying instructor and was acting as a safety pilot and judge for the competition. The approach to land was high and the pilot decided to go around, however, the safety pilot suggested that sufficient strip remained for completion of the landing.

The aircraft touched down about 600 metres beyond the runway threshold and bounced. The pilot applied some power and continued with the landing attempt, but the stall warning sounded and the airspeed was noted to be below 40 knots. The front seat passenger retracted flap to the take-off setting and instructed the pilot to apply full power and to lower the nose of the aircraft. He then placed his hands on the controls to monitor the pilot's control inputs. The aircraft failed to accelerate as it flew along the strip about a metre above the ground. It subsequently struck the airfield boundary fence before coming to rest 160 metres beyond.

14 Dec 86, CESSNA 182 F, VH-DIJ, Private, CHARTERS TOWER 9N, 02300 hrs
The pilot reported that while he was conducting a landing at his property strip, a calf and cow ran onto and along the strip. To avoid the animals he decided to delay any further descent until the aircraft had passed the animals. However, when the aircraft was about 15 feet above the strip, the nose dropped and the nosewheel struck the ground resulting in damage to the firewall, engine mounts and the cabin floor.

The pilot did not adequately monitor the airspeed during the the extended hold off period and the aircraft stalled onto the strip.

This accident was not the subject of an on-site investigation.

22 Dec 86, PIPER 18-125/A1, VH-HCM, Commercial, REDCLIFFE QLD, 07000 hrs
The student had completed about seven hours training and was undergoing her second session of circuit training. The instructor stated that the student had previously had difficulty with the directional control of the aircraft. On this takeoff he allowed the student to manipulate only the rudder, so that she could concentrate on the directional control aspect, while he manipulated all the other controls. As the power was increased the aircraft gradually swung to the left. Approaching the left side of the strip the swing increased and the instructor applied right rudder at the same time as the student. The aircraft swung to the right and as it crossed the right side of the strip the left wheel dug into the ground and the aircraft tipped onto the left wing.

10 Dec 86, CESSNA 210 M, VH-MOB, Commercial, NEWMAN WA 21NW, 00440 hrs
The pilot was ferrying the aircraft to a nearby strip because of planned runway works at Newman. After holding overhead the strip, while two other company aircraft landed, the pilot descended the aircraft into the circuit and completed the prelanding checks. He elected not to lower the gear at that time because he considered the airspeed was to high. The aircraft was subsequently landed with the gear retracted.

The pilot stated that he was concentrating on to carry out a good landing. Although he recalls touching the landing gear selector on final, he does not recall checking the gear position indicators.

This accident was not the subject of an on-site investigation.

06 Jan 87, PIPER 28 151, VH-BSY, Senior commercial, MCKINLAY 90SW, 04300 hrs
Shortly after the student had made a normal touchdown, a sheep ran across the strip in front of the aircraft. The instructor had not been looking forward, and he was taken by surprise when the student applied a considerable amount of nosewheel deflection in an effort to avoid the animal. The aircraft ran off the side of the strip and struck an earth run-off water vane.

It was reported that the strip was 37 metres wide and this width is less than that required for a training authorised landing area.

This accident was not the subject of an on-site investigation.

20 Jan 87, CESSNA 182 G, VH-DGF, Private, YATTON QLD, 00295 hrs
The pilot was approaching to land in 10 knot crosswind conditions. Turbulence was encountered in the circuit area, and the pilot elected to approach at 80 knots with 20 degrees of flap selected. After a normal flare, the aircraft floated for half the 610 metre strip before touching down. The pilot applied heavy braking, but was unable to stop the aircraft within the confines of the strip. Damage was sustained as the aircraft passed through three drains.

The approach speed was higher than required for the existing conditions. The strip sloped down in the direction of landing and it is probable that a tailwind existed at the time of landing.

04 Mar 87, PIPER 31, VH-PNL, Airline transport, CAPE FLATTERY QLD, 18000 hrs
The aircraft was engaged in the transfer of passengers from Cape Flattery to Cooktown. It was observed to overshoot from the first approach and to carry out a low level circuit subsequently landing with the gear retracted.

The pilot reported that during the circuit following the missed approach, he was required to adjust the circuit pattern because of heavy rain in the area, and as a consequence flew a tighter than normal circuit. He also stated that during the circuit he was interrupted by radio conversations with another aircraft which was approaching Cape Flattery.

An inspection of the aircraft revealed that the gear was in the locked up position and no damage had been caused to the main gear doors. No fault was found with the landing gear system that could have caused it not to extend when correctly selected down. The pilot believed that it was possible that when moving the gear selector lever to the down position he had not moved it fully down. He does not recall checking that the gear down indicator lights illuminated.

05 Mar 87, GOVT.AC N24-A, VH-FCX, None, NOOSA QLD, 00000 hrs
A person who had previously held a Commercial Pilot Licence gained entry to the aircraft and was able to start the engines. The aircraft then apparently rolled forward and collided with a disused fuel tanker.

At about 0710 hours in the morning the regular pilot arrived to find the aircraft embedded in the side of the tanker with the engines still operating at low power. The person was subsequently located, by police, asleep on the side of a nearby road.

11 Mar 87, BEECH C90, VH-FDP, Commercial, CHARLEVILLE QLD 150NW, 11185 hrs
The pilot had been advised by the property owner to land on a strip about two kilometres from the homestead instead of the usual strip. The available strip length was 1400 metres which was adequate for the operation. The pilot reported that when the aircraft became low during the later stages of the approach, he applied power, but realised that the main wheels would probably pass through tall grass near the threshold. Just prior to touchdown, the pilot heard and felt a loud bang. Immediately after touchdown, the aircraft adopted a left wing low attitude before the propeller blades of the left engine and left wing tip contacted the ground. The aircraft slewed through 90 degrees to the left and ran off the strip.

The investigation revealed that when the landing gear was allowed to pass through the long grass in the undershoot area, it struck a concealed mound of earth, seven metres prior to the threshold. The impact caused the left oleo leg to become detached from the aircraft.

18 Mar 87, PIPER PA44-180, VH-KHG, Commercial, HERBERTON QLD, 11500 hrs
Shortly after touchdown the nosewheel struck a 20 centimetre high anthill. The downlock latch on the nosegear was broken and when the nosewheel entered a slight depression, some 145 metres further along the ground roll, the nosegear collapsed.

The pilot had overflown the strip during the approach. However, due to the height of the grass on the strip the anthill would have been difficult to sight from the air.

02 Apr 87, BRITTEN NOR BN2-A21, VH-SBH, Commercial, MABUIAG IS QLD, 07256 hrs
During the later stages of the approach the aircraft developed a higher rate of descent than desired. The right main gear subsequently struck a sand filled drum which was located just short of the threshold lip. The impact resulted in the right wing being buckled and one of the right engine mounts fracturing. The pilot reported that he did not believe that the landing was heavy and as a consequence did not discover the damage on a subsequent superficial inspection before continuing the flight.

The approach was flatter than normal and into a 20 to 30 knot wind. On late final the aircraft encountered a downdraught and the pilot did not arrest the rate of descent, resulting in the touchdown occurring prior to the threshold.

07 Apr 87, CESSNA T337 B, VH-DPX, Commercial, MAER ISLAND QLD, 02028 hrs
The pilot reported that he had difficulty obtaining effective braking during the landing roll, due to a grassed, wet strip surface. He was able to initiate a groundloop near the end of the landing roll but the aircraft drifted sideways off the side of the strip prior to the upwind threshold.

Very heavy rain had fallen during the previous night and up until 30 minutes prior to the landing, and there were areas of standing water on the strip. The airstrip was not suitable for the intended operation.

09 Apr 87, CESSNA 337, VH-RDY, Senior commercial, MAER ISLAND QLD, 01890 hrs
On the night prior to the accident heavy rain had fallen in the area. The pilot stated that he carried out an inspection of the centre section of the strip prior to departure and found it to be suitable. This inspection did not include the last 150 metres of the strip, in the proposed direction of take-off. The area used for the take-off roll was to one side of the centre of the strip, where the grass cover varied substantially in length and density.

During the takeoff run the aircraft entered a patch of water approximately 150 metres before the upwind end, causing the airspeed to rapidly decay from 65 knots to 40 knots. The pilot elected to continue the take-off and overran the strip before encountering thick vegetation.

13 Apr 87, CESSNA 182 K, VH-DQR, Private, MT ISA QLD 240SSW, 00175 hrs
Shortly after what was reported by the pilot as a normal landing the nosewheel fork failed. This allowed the nosegear strut to dig into the strip surface and resulted in the aircraft overturning.

The nosewheel fork failure was found to have been caused by overload forces and there was no evidence of any pre-existing defect.

07 Apr 87, ROLLASON BETA STANDARD, VH-IWA, Private restricted, KOORALBYN QLD, 00128 hrs
It was reported by a witness that the aircraft bounced several times on landing and ran off the strip, collapsing the the maingear.

The accident was not reported by the pilot and the pilot and wreckage were not located until some five months after the accident.

The pilot stated that he had been taxiing the aircraft to keep it serviceable. Whilst taxiing with the tail off the ground, the aircraft began to bounce uncontrollably. He said, that in the interests of safety, he applied full power, took off and flew a circuit. During the subsequent landing, the aircraft bounced, causing the landing gear to collapse. Following the accident he removed the wreckage to a farm for storage.

This accident was not the subject of an on-site investigation.

04 May 87, CESSNA 152 M, VH-UFU, Senior commercial, BRIBIE ISLAND QLD, 02150 hrs
During a flying training sortie the instructor simulated an engine failure by moving the mixture control to the idle cut off position. The student closed the throttle and pulled the carburettor heat on, the instructor then moved the mixture

control to rich. During the descent the throttle was opened twice. Prior to commencing a go-around, at about 100 feet above ground level, the student moved the carburettor heat control to cold. At about 200 feet, on climb, the instructor simulated another engine failure by again moving the mixture control to idle cut off. As soon as the student lowered the nose of the aircraft the instructor moved the mixture control to rich, with the throttle open. However, there was no response from the engine and the aircraft was subsequently landed in swampy terrain.

No mechanical engine defect was found and tests carried out revealed that the engine should have been capable of operating normally. Atmospheric conditions at the time of the accident were conducive to moderate carburettor icing at cruise power and severe icing at descent power. The carburettor heat control was not operated in accordance with the manufacturer's instructions.

01 Jul 87, PIPER PA36-375, VH-PXZ, Commercial, OAKEY QLD 26S, 01276 hrs
The operator of the aircraft had contracted to spray 160 hectares of barley with weed killer. On arrival over the property, the pilot flew an inspection orbit and commenced spraying the first paddock towards some tall trees and a powerline. After this first pass the aircraft was pulled up into a procedure turn before diving steeply over the same obstacles, in the reciprocal direction. When the aircraft was clear of the obstructions, the pilot attempted to level the aircraft for the next spray run. However, the aircraft continued along its established flight path until striking the ground in a pronounced nose high attitude. The impact damaged the propeller, spray booms and landing gear. Chemical sprayed over the windscreen depriving the pilot of forward vision, and he was unable to control the subsequent landing run sufficiently to prevent the aircraft from broadsiding.

The aircraft was being operated at a weight in excess of the Agricultural Gross Weight and at a relatively slow airspeed. During the pullout from the dive, the load factor ('G' loading) applied to the aircraft caused an aerodynamic stall. The pilot was unable to effect a recovery at such a low altitude.

07 Aug 87, VICTA 115, VH-RQH, Commercial, KAGARU QLD, 03181 hrs
After takeoff the aircraft was flown to the local training area where upper air sequences were carried out. Following their successful completion the pilot was instructed to carry out a practice forced landing. The first attempt resulted in a significant undershoot and the aircraft was climbed to 2500 feet for a further attempt. On the second attempt the aircraft was placed in a position too high and too close to the proposed landing strip, so the pilot under check decided to fly an 'S' turn to lose altitude. During this manoeuvre the aircraft became grossly misaligned with the strip, the stall warning horn was sounding intermittently and the instructor instructed the pilot to go-around. However, the pilot banked the aircraft steeply to the left to align it with the strip, the aircraft began to roll rapidly to the left and despite the application of right rudder and full power it struck the ground. The nosegear and left maingear collapsed and the aircraft came to rest after a ground run of 39 metres.

07 Aug 87, PIPER 34 200, VH-SMM, Private, CALOUNDRA QLD, 01500 hrs
Shortly after touchdown, the gear unsafe warning horn sounded and the red gear unsafe warning light began to flash. The right wing slowly lowered and the aircraft veered to the right of the strip before coming to rest.

An inspection revealed that the right maingear had collapsed because of the fatigue failure of the maingear side brace attachment stud. The fatigue cracks on the stud initiated in rough machine tool marks in the radius between the shank and the lug.

13 Aug 87, DE HAV DHC2-MK1, VH-HQE, Commercial, HAYMAN ISLAND QLD, 05300 hrs
The pilots departure from Shute Harbour aerodrome had been delayed and he was running late for his arrival at Hayman Island. During the short flight he noticed that the cruising indicated airspeed was slightly less than normal, but attributed this to the possibility of water in the pitot system, a problem that he had encountered the previous day in another aircraft. On touchdown for the water landing, the pilot realised that the wheels were still extended. He attempted to prevent the floats digging in but the left wing struck the water before the aircraft came to rest.

This accident was not the subject of an on-site investigation.

23 Aug 87, PIPER 28 140, VH-CWE, Private, NOOSA QLD, 01034 hrs
The pilot was taking part in a flying competition consisting of several flying sequences flown from the right hand seat and monitored by a safety pilot/adjudicator occupying the left hand seat. The sequences included a practice forced landing that was commenced from the upwind end of the strip at an altitude of 1500 feet. This sequence was to be conducted without the use of the aircraft instruments. Accordingly all the instruments, including the stall warning indicator, but with the exception of the tachometer and the vacuum gauge, were covered with a piece of cardboard.

The pilot stated that he set the aircraft up in a glide for runway 29. Approaching over a tidal lake, and on late final, he realised that the pilot had not adequately compensated for the wind and an undershoot was developing. The safety pilot said that he noticed the rate of sink increase rapidly on late final and when the pilot at the controls did not apply power, he called for a go-around and applied power. However, the mainwheels contacted the water and the aircraft nosed over coming to rest inverted in the shallow lake, 150 metres prior to the runway threshold.

13 Sep 87, CESSNA 172-RG, VH-KOS, Private, TOOWOOMBA QLD, 00153 hrs
The pilot was manoeuvring the aircraft on the apron to park adjacent to another parked aircraft. Whilst making a right turn he was observing the other aircraft which was to his right, when the left wingtip struck a corner post of the airport boundary fence. The pilot had observed the fence post prior to commencing the turn and had assessed that there would be adequate clearance for the manoeuvre. However, he failed to continue monitoring the clearance with the post during the turn.

14 Sep 87, BEECH A36, VH-TLB, Private, GOONDIWINDI QLD 76WNW, 00110 hrs
The pilot had landed at the strip on a number of previous occasions, but this was the first time in this aircraft type. To give himself more time the pilot made a longer than normal final approach. At about 100 feet above the ground, with the airspeed at about 65 knots, the aircraft began to sink. The pilot applied full power to commence a go-around and as the nose pitched up, the left wing dropped. The pilot did not prevent the nose of the aircraft pitching up, thus aggravating the almost stalled condition of the aircraft. Power was then reduced and the aircraft landed heavily in a wheat paddock along side the strip and slid sideways as it came to rest.

23 Sep 87, AEROCDR 500 S, VH-MEH, Commercial, CHARTERS TOWERS QLD, 01350 hrs
The pilot had been conducting a six and a half hour low level survey flight. He stated that on joining the circuit, at the completion of the flight, he lowered the landing gear and obtained a gear down indication. The gear indication was again checked on final approach but during the subsequent landing roll, as the nosewheel was being lowered to the runway, the landing gear handle in the cockpit sprung to the up position. The landing gear retracted and the aircraft slide to a halt on its undersurface.

An inspection of the aircraft could find no pre-impact defect with the landing gear or its systems which could have contributed to this inadvertent retraction. The landing gear was found to be capable of normal operation. The reason for the selector deselection remains undetermined.

19 Feb 87, CESSNA 172 M, VH-UGK, Private, BANKSTOWN NSW, 00107 hrs
The pilot reported that during the takeoff roll the aircraft was slow to accelerate. At about 50 knots the aircraft became airborne in a nose-high attitude, and the pilot experienced difficulty in lowering the nose. Shortly afterwards the aircraft stalled, the left wing dropped and the aircraft turned through about 120 degrees before impacting the ground. It was determined that the takeoff had been conducted with the flaps in the fully extended position.

The pilot had not previously flown this particular aircraft, and was not aware that a flap position indicator was fitted. He had judged the takeoff setting by watching the flaps extend, and had then released the selector, expecting it to be spring-loaded to the neutral position. However, the centering spring was broken and the flaps continued to full extension. The aircraft was found to be about 57 kilograms above the maximum permitted all-up-weight, and the centre of gravity was close to the rear limit. It was evident that the pilot was surprised by the aircraft attitude and the unusually high control column forces required after takeoff, and was unable to react to the situation in time to avoid losing control of the aircraft.

23 Feb 87, PIPER 30, VH-CON, Commercial, BANKSTOWN NSW, 12800 hrs
During a training sequence, the pilot in command simulated a failure of the left engine. The pilot under check correctly identified the failed engine, and applied full right rudder to counter the effects of yaw. The flight then continued normally, but the crew were later unable to obtain a down and locked indication for the landing gear. An inspection from another aircraft revealed that the gear was only partly extended, with the nosewheel turned to the right. After all efforts to lower the gear were unsuccessful, a safe wheels-up landing was made. It was later discovered that there was a rigging fault in the nosewheel steering and rudder system. This had allowed a roller, which normally engages in a channel to centre the nosegear during retractions, to move outside the channel when full right rudder was applied. This had resulted in jamming of the nosegear.

26 Feb 87, PIPER 25 235, VH-BCJ, Private, WAGGA NSW, 01000 hrs
When the pilot arrived at his planned destination, he was unable to obtain a down and locked indication for the nosewheel. Both normal and emergency means of lowering the gear were employed, but without success. A diversion was made to a more suitable aerodrome, where a safe landing was made with the nosegear retracted.

It was determined that the hinge on the left door of the nosegear assembly had seized because of corrosion. On the previous retraction, the door linkages had been forced out of position in such a manner that the gear doors were jammed closed. All required maintenance and inspections had been certified as being completed, and it was not possible to determine how the hinge had become corroded.

26 Feb 87, MOONEY M20 J, VH-IJL, Commercial, WEE WAA NSW, 01200 hrs
When preparing for the return leg of a charter flight, the pilot discovered that the engine starter motor would not engage. He elected to hand-start the engine, and briefed the passenger on the operation of the controls. No wheel chocks were employed. When the engine started, the aircraft commenced to move and the passenger's efforts to control the aircraft were ineffective. After travelling about 20 metres the aircraft ran into a ditch and the engine stopped after the propeller struck the ground.

08 Mar 87, BELLANCA 8-KCAB, VH-SFK, Private restricted, SCHOFIELDS NSW 1E, 00922 hrs
The pilot intended to conduct a practice aerobatic flight, and had arranged for an observer on the ground to monitor and assess his performance. The planned sequence was commenced, but the observer noted that the second manoeuvre was not completed satisfactorily, and the aircraft apparently stalled while inverted. After recovering from this situation, further manoeuvres were carried out. Other witnesses suggested that the entries to some of these manoeuvres were performed at higher 'G' loadings than normal. The aircraft subsequently entered a spiral dive, which was continued without any apparent effort being made to effect recovery. The aircraft maintained the spiral until it collided with power lines, then impacted the ground. A fierce fire broke out and consumed the wreckage.

A detailed investigation failed to discover any defect or malfunction with the aircraft or its systems which might have contributed to the accident. The pilot had been in current practice for aerobatic flight, and there was no evidence of any physical illness or incapacity which might have affected his ability to control the aircraft. However, it was evident that the aircraft was not under control during the spiral dive. It was considered possible that the pilot might have lost consciousness as a result of either a rapid increase in 'G', or sustained high 'G' loads applied during the preceding aerobatic sequence.

11 Mar 87, MOONEY M20 J, VH-UDD, Commercial, BANKSTOWN NSW, 01003 hrs
As part of a refresher check on the aircraft, the instructor required the pilot to use the manual system for lowering the landing gear. After turning the crank handle the recommended number of turns the gear down light did not illuminate. The pilot continued to rotate the crank handle a few more turns and a loud bang was heard, following which there was little resistance to crank handle movement. However, the gear down light still did not illuminate although the visual gear position indicator in the cockpit did indicate that the gear was in the down position. The gear actuator circuit breaker was reset and the gear selected up; the gear did not retract but the gear unsafe light illuminated. All further attempts to obtain a gear down light were unsuccessful. Observations made from another aircraft and by persons on the ground indicated that the gear was down and locked. The aircraft was diverted to Bankstown and the gear collapsed immediately after touchdown.

A fault in the gear indicating system prevented illumination of the gear down light when the gear reached the down and locked position on the initial manual extension. When the crank handle was wound further, an overload failure of the actuator housing occurred. The gear was unlocked when the up selection was made but the damaged actuator prevented either retraction or safe extension. The actuator has a vital function in retaining the gear in the down and locked position as it pre-loads the landing gear braces in an overcentre position. Once the actuator was damaged, gear collapse on landing was inevitable.

14 Mar 87, PIPER 32 300, VH-PWD, Private, COOTS CROSSING 3S, 04500 hrs
The aircraft had not been flown and had stood in the open for about two months. Some 20 minutes after departure the engine commenced to run roughly, and the pilot elected to divert to the nearest suitable aerodrome. Shortly afterwards, the engine backfired severely and black smoke entered the cabin through an air vent. The engine subsequently stopped completely and the pilot was committed to a forced landing on unsuitable terrain. The gear collapsed and the aircraft collided with two fences before coming to rest. On vacating the aircraft, the pilot discovered that a fire was burning under the cowls on the right side of the engine. The fire was extinguished by the pilot and passengers.

The cause of the engine failure could not be determined. However, the insulation of both magneto coils was badly deteriorated. It is considered likely that during the period that the aircraft was inactive, moisture accumulated in the magnetos. This moisture, together with the deteriorated insulation, probably caused the magneto to misfire and fail.

The fire developed in the engine bay after severe backfiring caused the exhaust cluster on the right hand side of the engine to separate from the muffler. The hot exhaust gases then ignited the fibreglass cowling and the melting resin emitted the black smoke which entered the cabin via the hot air vent.

17 Mar 87, PIPER PP60-600, VH-NOA, Senior commercial, ARMIDALE NSW, 04220 hrs
Shortly after touchdown the left wing began to drop and the aircraft veered off the runway. It came to rest after colliding with a runway light and a culvert. Inspection revealed that the castellated nut from the left gear torque link pivot bolt was missing. This allowed the lower torque link to rotate with the wheel and separate from the upper torque link.

It was evident that a split pin which should have locked the castellated nut had not been in place for a considerable time, thus allowing the nut to work loose. However, the reason the pin was not in place could not be positively established.

31 Mar 87, BEECH 58-TC, VH-FTZ, Commercial, TAMWORTH NSW, 16830 hrs
On arrival at the destination aerodrome, the pilot was unable to obtain a down and locked indication for the landing gear. He noted that when the gear was selected, there was an abnormal noise, and the gear motor only ran for a few seconds. On a subsequent re-cycling, a down and locked indication was obtained, but the pilot noticed a strong smell of hydraulic fluid. A diversion to a more suitable aerodrome was made, where a flypast confirmed that the gear appeared to be extended. The gear warning horn did not sound when the throttles were closed. However, the pilot was unable to move the emergency gear handle from its stowed position when he decided to use this device to ensure the gear was in fact down.

During the ground roll, following a smooth touchdown, the right main gear collapsed. The investigation revealed that the right gear up-lock roller was seized. The pilot did not detect this fault during the pre-flight inspection. The landing gear braze rod, the push rod between the actuator and landing gear, was bent and the relevant gear position microswitch was incorrectly adjusted, resulting in a premature landing gear down and locked indication. The landing gear manual extension handle could not be moved because of an incorrectly fitted trim panel. All these mechanical defects were a consequence of inadequate maintenance.

14 Apr 87, CESSNA 210 K, VH-CHL, Private, DUBBO NSW, 01000 hrs
The pilot intended to conduct a series of night circuits and landings to maintain currency. On the second circuit, the gear was selected down but failed to fully extend. All attempts to lower the gear were unsuccessful. The aircraft subsequently touched down with the partially extended gear, which collapsed as the aircraft slid to a halt.

An inspection of the aircraft revealed that the failure of left maingear hydraulic actuator resulted in the loss of hydraulic fluid and prevented completion of the gear extension cycle.

20 Apr 87, PIPER 34 200, VH-SEN, Private, TRUNDLE NSW 30E, 00680 hrs
When the pilot arrived at his destination it was after last light and there was no strip lighting available. The pilot nevertheless decided to land, and although he believed he had aligned the aircraft with the strip correctly, it was in fact lined-up to the left of the strip. After touchdown the aircraft ran through a washout and the nosegear and left maingear collapsed.

The pilot had been aware when he commenced the flight that he would be unable to reach his destination before last light. He had been reluctant to land at an alternate aerodrome, because he had been wearing old clothes and had no money or credit cards with him.

This accident was not subject to an on scene investigation.

16 May 87, AUSTOR J5-190, VH-SCO, Airline transport, GRETA NSW 3NNE, 09107 hrs
The aircraft was one of a group attending a vintage aircraft fly-in. It had been engaged on a photographic flight in company with another aircraft, in an area west of the Hunter River. During the return to the strip, the two aircraft became separated. The subject aircraft was observed to descend to a low height over the river, while apparently tracking for a right base leg position. It subsequently collided with powerlines and trees before falling to the ground about 1.5 kilometres from the strip.

The powerlines consisted of three cables strung on individual poles. The span which crossed the river was about 645 metres in length, and the height of the cables at the point of collision was 35 metres above the river level. The weather at the time was fine, with no restrictions to visibility. However, the wires were difficult to see against the background, and the pilot had not been aware that there were any powerlines in the vicinity.

27 May 87, PIPER 28-161, VH-UZT, Senior commercial, BANKSTOWN NSW, 04200 hrs
The pilot intended to conduct a short flight using Night VMC procedures. Shortly after take off from runway 29C, when the aircraft had reached a height of about 250 feet above the ground, the engine commenced to run roughly, with an associated loss of power. The pilot applied carburettor heat, but was unable to regain climbing power. A skidding left turn was carried out to position the aircraft for a downwind landing on the aerodrome. Touchdown occurred on a north-easterly heading near the eastern end of runway 29 on an unlit area. The aircraft bounced and power was applied to effect recovery. During the recovery the aircraft passed over a series of hangars before stalling at a low height and landing heavily on a sealed taxiway.

An inspection of the engine revealed that the power loss was caused by a mechanical failure of the right magneto which affected the ignition timing.

23 Jun 87, BEECH 58, VH-PBU, Commercial, BANKSTOWN NSW, 00366 hrs
The pilot had completed an endorsement on the aircraft type two days previously, and intended to carry out a series of circuits with touch and go landings to consolidate his training. During the landing roll following the first touchdown, the pilot inadvertently retracted the landing gear when he attempted to raise the flaps. The aircraft slid to a halt on the runway.

The instructor who had carried out the endorsement training was not aware that it was company policy to prohibit the conduct of touch and go landings for solo operations in retractable gear aircraft. He had therefore not briefed the pilot on this matter. The pilot stated that during his circuit training in the aircraft, which consisted of a series of touch and go landings, the instructor had raised the flaps after each touchdown. The pilot had only limited exposure to retractable landing gear aircraft types with the gear and flap controls laid out in a similar fashion to this particular aircraft.

27 Jun 87, JODEL D9, VH-PBW, Private, COOMA NSW, 00240 hrs
The pilot reported that the takeoff and initial climb were normal. However, a substantial loss of engine power had occurred when the aircraft had just passed the upwind end of the runway and had reached a height of about 400 feet. The engine regained power briefly but then failed completely. The pilot considered that the terrain ahead of the aircraft was unsuitable for a forced landing, and he elected to attempt to return to the strip. By this time the aircraft had descended to a height of about 200 feet. As the aircraft entered the turn it stalled and attempts by the pilot to recover from the stall were unsuccessful. The aircraft descended rapidly and struck the runway about 56 metres from the threshold.

An investigation of the aircraft revealed no pre-existing defects which could have contributed to the accident and the cause of the reported loss of engine power remains undetermined.

19 Jul 87, CESSNA R172 K, VH-SPJ, Private, COLLECTOR NSW 3N, 00380 hrs
The pilot was flying the jump aircraft for a parachute club. After having completed the fifth drop for the day, the aircraft was observed to make a high speed pass, at an altitude of about ten feet above the ground, over a group of spectator parachutists. The aircraft then climbed steeply to an estimated altitude of between 200 and 300 feet before carrying out a wingover type manoeuvre. It then descended rapidly and impacted the ground in a slightly nose low, left wing low attitude, before nosing over and coming to rest 56 metres from the point of impact. The pilot was trapped inside the wreckage and the efforts of would be rescuers were thwarted by a fire which rapidly engulfed the aircraft.

An examination of the wreckage failed to reveal any pre-existing mechanical fault. It was reported that the pilot had carried out similiar manoeuvres on previous occasions, and had been counselled, about these activities, by the senior instructor at the parachute club.

06 Aug 87, CESSNA 180 G, VH-MJC, Private, TENTERFIELD NSW 15S 02526 hrs
The aircraft had been parked in the open and was exposed to a heavy frost. The pilot and his son attempted to clear ice accumulations from the top surfaces of the aerofoils by throwing warm water over them. Some 20-25 minutes elasped between the ice clearing operation and the takeoff attempt, during which time the aircraft was taxied to the airstrip and a second passenger emplaned. No further checks were made for new accumulations of ice.

Following lift off, the aircraft commenced an uncommanded turn to the right. By the use of full left aileron and left rudder, the pilot was able to regain some directional control, but could not prevent the aircraft from striking boulders on the side of the strip. During the subsequent ground slide, the fuel system was broached and the aircraft was destroyed in the resulting fire.

Post crash inspection of the aircraft revealed that the rudder had been fouling the elevator control, thereby preventing adequate control travel, for continued flight under the existing conditions.

11 Sep 87, PIPER 28 235, VH-FAR, Private, KULPRA STN NSW, 00300 hrs
The purpose of the flight was to return to Underbool after visiting friends and relatives at Kulpra Station. On departure from Underbool the aircraft carried 136 litres of fuel, 68 litres in each main tank, the tip tanks were empty. The flight to Kulpra was conducted using fuel from the right main tank.

The pilot stated that at an altitude of about ten feet after lift-off, the engine failed. The aircraft was landed back on the strip, heavily on the nosewheel, and the nosegear subsequently collapsed. The pilot reported that on inspection the fuel tank selector was positioned to draw fuel from the empty left wingtip tank instead of the left main tank.

12 Sep 87, CESSNA 182 H, VH-PQB, Private, HOXTON PARK NSW, 00093 hrs
The pilot reported carrying out a normal approach to runway 34 in light and variable wind conditions. The aircraft bounced on first touchdown and then landed heavily on the nosewheel. Several more bounces occurred before the aircraft came to rest. The pilot taxied the aircraft back to the parking area where he found that the propeller blades had been bent.

After the initial touchdown the pilot had attempted to correct the bounced landing by pushing the control column forward.

17 Sep 87, AIRPARTS FU24-954, VH-MYW, Commercial, BRAIDWOOD NSW 20S, 24000 hrs
The pilot was operating from an agricultural landing area. During the takeoff run the left mainwheel struck a vehicle tyre, that was being used as a strip marker. The tyre was flung into the air and struck the left stabilator causing it to jam in about the neutral position. As there was insufficient strip remaining to land the aircraft and bring it safely to a halt, the pilot decided to continue with the takeoff. The pilot subsequently landed the aircraft in a paddock three kilometres from the point of departure. During the landing roll the aircraft struck a fence.

The pilot had commenced the takeoff from the left side of the strip because the centre area was rough. The tyre struck by the aircraft was difficult to see as the white paint on it had worn off, and it was partly obscured by clumps of long grass.

20 Sep 87, CESSNA 210 M, VH-TIU, Private, MT SANDON 22N, 00600 hrs
The pilot stated that he carried out a normal circuit at his destination. During the landing roll he selected the flaps up, and then inadvertently selected the landing gear up before realising his mistake and selecting the gear down again. The gear up selection occurred just as the aircraft was travelling over a hump in the strip and it is believed that this, combined with the pilot holding up elevator, caused the weight of the aircraft to come off the wheels. This resulted in the landing gear safety switch becoming ineffective and the gear commencing the retraction sequence. When the aircraft came to rest the nosegear was fully retracted, the left maingear was partially retracted and the right maingear was still down and locked.

Subsequent inspection and testing of the landing gear system did not reveal any faults that could have contributed to the occurrence. The pilot stated that he believed he had mistakenly applied the after-takeoff checks instead of the after-landing checks and had selected the gear up instead of opening the cowl flaps.

This accident was not the subject of an on-site investigation.

31 Mar 87, PIPER 28 140, VH-PBR, Commercial, SWAN HILL VIC, 13000 hrs
The student was being instructed in crosswind techniques, and several circuits and landings had been completed without incident. On the final circuit a normal approach and touchdown were made, but during the landing roll the right wing lowered and the aircraft swung through 90 degrees. Initial inspection found that the lower torque link bolt on the right gear had failed, allowing the wheel assembly to detach.

Engineering investigation revealed that the torque link bolt was of defective manufacture in that stress raisers existed near the thread root. This condition resulted in a slow progressive fatigue fracture originating from the stress raisers. There is no inspection requirement for this bolt and the defect is considered an isolated case.

14 Jun 87, AUSTER J5 P, VH-BYW, Private, BALLIANG VIC 2SE, 00390 hrs
The pilot was carrying out practice circuits for type familiarisation. Landings were being made into wind and on the first touchdown the aircraft bounced and the pilot carried out a go-around. On the next approach, the aircraft bounced on touchdown to about 10 feet above the ground, and the pilot held the elevator control back and opened the throttle rapidly, intending to go around. The engine failed to respond and the aircraft landed heavily, collapsing the left maingear.

No defect was found with either the engine or the failed gear tubing that could have contributed to the accident. The misjudged landing flare was probably a result of the pilot's lack of familiarity with the aircraft type. The recovery was initiated too late and the lack of response from the engine was most likely due to the throttle being opened too rapidly.

28 Jun 87, CESSNA 172-N, VH-TST, Private, TYABB VIC, 00205 hrs
The taxiway for the particular strip is a continuation of the gravel centre section of the strip. The taxiway then makes a right angled turn. After a normal landing the pilot proceeded straight ahead, along the taxiway but failed to negotiate the turn. The aircraft entered a ditch and the left wing struck the ground.

No fault was found with the aircraft's brake or steering systems that could have contributed to the accident. Insufficient attention was paid to the operation of the aircraft and the turn was attempted at too high a speed.

12 Sep 87, BEECH V35 B-MK2, VH-ILY, Private, MITTA MITTA 3.5NW, 00200 hrs
Upon arrival at Mitta Mitta the pilot performed a touch and go on the 1000 metre long gravel strip, before approaching for the full-stop landing. After touchdown, the aircraft veered to the right but was repositioned on the centreline within a short distance. However, it again veered to the right and departed the hard packed gravel surface of the

strip and entered an area of long, damp grass. The pilot was unable to control the direction of travel and the aircraft encountered a drainage ditch, an earth mound and a fence before coming to rest with its noseleg collapsed.

No fault was found with the aircraft systems that may have contributed to the accident. The pilot had not flown the aircraft for 18 months and it is probable that the veer was caused by differential braking in combination with the damp, slippery grass on the sides of the strip. Weather conditions were fine and calm and were not considered a factor.

08 Feb 87, CESSNA 210 N, VH-UFA, Commercial, NUMBULWAR NT 19SW, 00855 hrs
The aircraft was to be ferried out of the path of an approaching cyclone. Shortly after takeoff the pilot heard a loud noise and the engine began to vibrate violently. He turned the aircraft towards the only available area and transmitted a "Mayday" call. During the turn, oil began to stream over the windscreen from the rear of the engine. The area selected for landing was about 600 metres long and surrounded by low trees. The approach was high and fast and the aircraft was still airborne as it approached the end of the area. The pilot elected to stall the aircraft into the trees.

The engine crankshaft was severely damaged on the No 4 and 5 big-end journals, consistent with a loss of oil, seizure of the bearings and eventual failure of the connecting rods. An explanation for the loss of oil supply to those bearings could not be established, however, it is likely that the bearings were able to spin in their mounts which blocked off those oil feeder holes.

This accident was not the subject of an on-site investigation.

05 Jun 87, BEECH 76, VH-RVS, Senior commercial, PARAFIELD SA, 16350 hrs
When the pilot selected the gear lever to the down position, only the maingear responded. Attempts to lower the nosegear were unsuccessful and the aircraft was landed with the nosegear retracted. After touchdown both propellers were feathered. However, the right propeller did not stop in the horizontal position and as the nose of the aircraft was lowered the propeller dug into the runway. The right engine was torn from the aircraft and the aircraft slewed to the right, damaging the left wing and propeller.

Investigation determined that the cause of the nose gear binding, was inadequate lubrication of the nose gear door hinges. This extra resistance resulted in the actuating mechanism coming out of alignment, which caused the gear to jam. After the engines had stopped rotating, there was insufficient time for the pilot to adjust the positions of the propellers prior to the nose of the aircraft dropping onto the runway.

01 Jul 87, CESSNA 210 M, VH-MCE, Private, ARKAROOLA SA, 00120 hrs
On arrival at the destination strip, the pilot assessed the wind to be from the west at about 15 knots. He decided to land on runway 03, using full flap, shortfield technique, but during the flare the pilot found he was unable to counteract right drift and the aircraft touched down on the nosewheel. The nosegear subsequently collapsed, and the aircraft skidded to a halt just off the right side of the strip.

The pilot said that during the approach he had been concentrating on his crosswind technique and had omitted to refer to the airspeed indicator after crossing the threshold. When he realised that the aircraft could not be aligned with the strip, he considered initiating a go-around but the aircraft struck the ground.

This accident was not the subject of an on-site investigation.

05 Jul 87, CESSNA 172-P, VH-WIQ, Commercial, ANTHONY LAGOON NT, 00950 hrs
The pilot attempted to takeoff on an access track to a cattleyard. A southerly wind of about 15 knots necessitated take-off to the south, towards the yard. The aircraft was near gross weight and short-field technique was used. At a position 411 metres from the brakes-release point, the right brake caliper assembly struck a 1.65 metre high section of fence which formed the cattleyard. The right wing sheared off outboard of the fuel tank when it hit an adjacent three metre high fence cap. The aircraft then impacted the ground in a steep nose down attitude and slid inverted for a short distance before coming to rest. The aircraft had been airborne for 155 metres prior to the first impact.

The pilot did not consult performance charts and underestimated the distance required for the aircraft to safely complete the take-off at this weight. There was sufficient room available for the pilot to taxi the aircraft at least a further 300 metres along the track to the north before attempting the take-off. A properly constructed, serviceable airstrip was located within 500 metres of the cattleyard.

11 Jul 87, PIPER 28 181, VH-TXN, Private, ALICE SPRINGS NT, 00160 hrs
After touchdown the aircraft bounced back into the air and the pilot then raised the flap to the fully retracted position. The aircraft contacted the runway nosewheel first, bounced again and landed on its nosewheeel for the second time. The nosegear subsequently failed and the aircraft skidded straight ahead and came to rest on the runway.

The pilot had been advised by an instructor, on the day he left on this trip, to use an approach speed of 80 knots. However, the Piper Operating Instructions for this aircraft recommends an approach speed of 66 knots. The aircraft was flared at 80 knots and ballooned. The pilot said that he was uncertain about landing at a major airport and apprehensive about this landing because of the possibility of wake turbulence from a Boeing 727, which had departed five minutes previously.

This accident was not the subject of an on-site investigation.

06 Sep 87, AMER AIR AA5-B, VH-MQW, Private, INNAMINKA SA, 00484 hrs
The pilot decided to land on the shorter of two strips, using a short field technique. Touchdown was made 75 metres into the 470 metre strip, but the pilot was undecided whether to apply maximum braking or to initiate a go-around. Full power was applied and the aircraft became airborne for a short time before touching down in rough terrain. It came to rest with both main gears collapsed, 282 metres beyond the end of the strip.

The pilot had not obtained data on the strip and therefore had not checked the landing performance chart which would have indicated that the strip was too short for the aircraft weight and prevailing conditions.

23 May 87, CESSNA 182 G, VH-DGI, Private, BOYUP BROOK 26NE, 00227 hrs
The pilot was conducting a parachute drop from 9000 feet. She reported that the cloud base was broken at about 4500 feet and that she climbed the aircraft through a break in the cloud cover to reach the drop altitude. After the parachutist had exited the aircraft the pilot found a break in the cloud cover and descended. However, she was then unable to locate the airstrip and spent some time flying in various directions until she decided to land and ascertain her location. A paddock was selected and after an aerial inspection a landing approach was conducted. The aircraft touched down about 150 metres into the paddock in tailwind conditions. It then ran through a fence, across a road and struck another fence before the nosegear leg collapsed. The aircraft then nosed over and came to rest inverted.

The accident site is located about 47 kilometres south-west of the Hillman Farm Airstrip.

After descending below the cloud base the pilot's reported actions did not include basic procedures when lost. She advised that when she could not establish her position, she became confused and apprehensive and consequently picked an unsuitably short paddock in which to land. The pilot had only recently recommenced flying after a 3 year break, and had completed a biennial flight review prior to conducting these parachute drops. Although this review totalled almost 6 hours flying and covered many important sequences, the instructor did not appreciate that the pilot had no cross-country experience in at-least that time. Navigation techniques and basic actions if lost were not covered in the review.

16 Jun 87, CESSNA 421 C, VH-URT, Senior commercial, BAGGA WA, 04161 hrs
On arrival in the circuit area, the pilot elected to land on runway 27. During the final approach to that runway he considered that the wind velocity favoured the opposite landing direction and carried out an overshoot, retracting both the gear and flap. The pilot does not recall lowering the gear at any stage during the subsequent circuit. Neither he nor any of the passengers recall hearing the gear warning horn when the second stage of flap was extended on the base leg. The aircraft was subsequently landed with the gear retracted.

Investigation revealed that the gear and warning systems were serviceable. Although the pilot used the checklist for the first approach he did not backtrack the list after the go-around, but instead relied upon his memory to initiate the required procedures prior to landing.

Rotary Wing

03 Jul 86, BELL 47 G3B1, VH-ANG, Commercial, COLEMAN RIVER QLD, 03500 hrs
The helicopter was being used in a program of disease eradication in cattle. After operating for about one hour, the pilot flew to a boat anchored in the river and hovered alongside it while signalling to the crew that the aircraft would return in about two hours. As the helicopter left the hover it was climbed to approximately 60 feet in a left turn through 270 degrees. The aircraft was then descended to an unnecessarily low altitude while gaining speed. Shortly afterwards, as the aircraft approached the bank of the river, the pilot realised that the aircraft was not responding to control inputs as he had expected. He applied more collective control in an effort to avoid flying into the water, but the rotor overpitched and the aircraft struck the water at about 40 knots.

No defect was found that would have prevented normal operation of the flight controls or engine.

28 Nov 86, HUGHES 2 269-C, VH-KLQ, Commercial — helicopter, SCARTWATER QLD 00440 hrs
The pilot was conducting cattle mustering operations. Weather conditions at the time were very hot, with a 10 to 15 knot wind. The pilot advised that while flying downwind at 30 knots and 80 feet above the ground, he commenced a pedal turn to the right. After some 90 degrees the turn suddenly stopped and the aircraft sank rapidly to about 35 feet above the ground. The main and tail rotors struck trees, but the pilot was able to maintain control and fly the helicopter to a clear area, where a safe landing was made.

No defect was found with the helicopter or its systems which may have contributed to the occurrence and the reason for the loss of control, reported by the pilot, was not determined.

This accident was not the subject of an on-site investigation.

17 Sep 86, AGUSTA 206-B, VH-LED, Commercial — helicopter, MANGALORE VIC 3NW 06924 hrs
The purpose of the flight was to film a moving train. Prior to commencing the operation, the pilot made an aerial inspection of the area and mentally noted the various obstructions. On the second filming run the helicopter collided with power lines at a height of 33 feet above ground level. The helicopter descended and struck the ground about 50 metres beyond the point of collision. It then bounced and came to rest on its side.

The pilot was highly experienced in aerial photography and survey operations. At the time of the accident, visibility was reduced to less than 2 kilometres in light rain. One of the poles supporting the power lines was hidden from the pilot's view by a large tree. It was also possible that the pilot had flown outside the area he had previously inspected, as he had not been aware of the presence of the particular set of wires.

27 Feb 87, HILLER UH12-E, VH-HJW, Commercial — helicopter, CHARTERS TWR 90SE, 06000 hrs
During the descent the pilot heard a loud bang, following which the engine stopped. An autorotational descent was carried out for a landing onto the clearest available area, a dry river bed. The helicopter touched down with some forward speed on the soft sand, pitched forward and rolled over.

An inspection of the wreckage revealed that a connecting rod big-end had failed due to fatigue. These fatigue cracks had initiated in the area of the recesses for the big end bolt nuts, where production machining was found to be quite coarse.

This accident was not the subject of an on-site investigation.

11 Apr 87, HUGHES 269-C, VH-HFC, Commercial — helicopter, CAIRNS QLD 130NW 00350 hrs
The pilot was attempting to bring the helicopter to a hover in the lee of a hill, but found that there was insufficient power to arrest the rate of descent. The aircraft struck the ground and rolled over. The pilot reported that the conditions were very windy.

The helicopter was reported to have been operating normally prior to the accident. The pilot stated that in attempting to arrest the rate of descent he had inadvertently overpitched the rotors at an altitude from which recovery was not possible.

This accident was not the subject of an on-site investigation.

14 Jul 87, BELL 206 B, VH-PHA, Private — helicopter, GAYNDAH QLD, 1800 hrs
The helicopter was heading in a westerly direction following takeoff from the pilot's property. The track was to take the aircraft directly over Mount Gayndah so the pilot decided to track to the south of the mountain to provide better terrain clearance. When the helicopter was abeam the mountain, at about 500 feet above ground level, it struck two power lines suspended between a pole on top of the mountain and a pole 1100 metres to the south in the foothills. The pilot was unaware the aircraft had struck the wires, but immediately lowered the collective and turned the aircraft towards the only available cleared area. Approaching the area it became obvious to the pilot that the aircraft would not clear trees on the approach path and he increased the collective. The helicopter cleared the trees and turned right through 180 degrees before touching down in a level attitude while travelling rearward. The landing skids collapsed and the aircraft slewed to the right before coming to rest.

The two 90 tonne breaking strain wires had been broken when they were struck by the main rotor blades of the helicopter. The wires then severed the tail rotor drive shaft, a substantial portion of one tail rotor blade and almost severed the tail boom just in front of the vertical stabilisers.

22 Jul 87, HUGHES 269-C, VH-MZR, Commercial — helicopter, TOWNSVILLE 260WNW 02235 hrs
The pilot was making a landing approach, to an area not normally used for helicopter operations, at the conclusion of a stock mustering operation. The helicopter collided with a single wire telephone line then landed heavily, rolling onto its side as the skids collapsed.

The pilot reported that the wire was normally difficult to see because of age discolouration and the long span between poles. On this occasion he had forgotten that the wire ran through the area and did not see it during the approach.

This accident was not the subject of an on-site investigation.

10 Mar 87, BELL 47G2, VH-KHK, Private, BALRANALD 90NE, 09700 hrs
The pilot reported that as he brought the aircraft into the hover in preparation for landing, it sank to the ground from a height of about 15 feet. The tailrotor blades struck a lygnum bush and the drive shaft sheared. The pilot indicated that the main rotor rpm had decayed, possibly from over-pitching during the latter stages of the approach.

Operations had been conducted in gusty wind conditions. When the pilot noted that the main rotor speed had decayed to 2800 rpm, he applied more power but was unable to arrest the rate of descent.

This accident was not subject to an on scene investigation.

18 Mar 87, HILLER UH12-E, VH-ECK, Commercial — helicopter, TAMWORTH NSW 4W 04448 hrs
The pilot had been carrying out crop spraying operations, and was hurrying to return to his base before last light. He was concerned with the fuel state, and made an enroute landing, where one of the passengers dipped the tank. Believing that adequate fuel remained, the pilot took off again, but shortly afterwards the engine lost all power. During the subsequent autorotation, manoeuvring was necessary to avoid power lines. The helicopter then landed heavily and the main rotor blades struck and severed the tail boom. It was determined that at the time of the accident the aircraft had been operating for 7 minutes longer than the expected total endurance.

The pilot had not kept an accurate record of fuel usage, and it was likely that his decision making processes had been impaired by fatigue. It was probable that the helicopter had been resting on sloping ground at the time the tank contents were checked, resulting in an erroneous reading on the dipstick.

27 Jul 87, BELL 206 B, VH-PHX, Commercial — helicopter, BANKSTOWN NSW, 06020 hrs
One of the pilots was undergoing practice in engine failure emergencies at night. The helicopter was equipped with a "Nightsun" light, which was used to illuminate the ground below the aircraft. Fixed lights were also installed at the edges of the helipad. During the third practice autorotative descent, the Nightsun light was inadvertently extinguished when the aircraft was about 300 feet above the ground. It was turned on again by the time the aircraft had descended to about 100 feet, and the remainder of the descent and flare appeared to be normal. However, after touchdown the aircraft became airborne again, before touching down on the heels of the skids while moving slowly forward. The aircraft rocked forward and the main rotor severed the tail boom just forward of the tail rotor assembly.

The surface of the helipad had been softened by recent rain, allowing the heels of the skids to dig in slightly. This probably accentuated the rocking movement which led to main rotor blade contact with the tail boom. The type of manoeuvre being performed requires a high level of skill. Should a slight error of judgement occur, there is little opportunity for any corrective action to be successful. It has been recommended that this type of training be modified to ensure that practice engine failure emergencies at night are terminated at a safe height above the ground.

17 Sep 87, BELL 47-G2, VH-KHK, Commercial — helicopter, HAY NSW 65W, 00830 hrs
The helicopter was engaged in the mustering of feral pigs for a cull. After descending the helicopter to follow the pigs into a cleared area, the pilot noticed that more power was required to fly the aircraft. The aircraft was immediately landed at the base area, where an inspection revealed damage to the leading edge of both rotor blades. The damage was consistent with the blades striking small branches of trees. The pilot reported that neither he nor his passenger had been aware of the helicopter striking any objects.

11 Mar 87, HILLER UH-12E, VH-MJV, Commercial — helicopter, DARWIN NT 135SW 02734 hrs
The pilot was directing cattle through a gate when a cow turned and began to walk back towards the helicopter. It stopped in front of the aircraft before charging. The pilot applied back cyclic and up collective in an attempt to avoid the animal but the tail rotor struck the ground. The helicopter began to yaw and the pilot landed the aircraft immediately. It continued to yaw after the landing and the landing skid assembly was substantially damaged.

The pilot was relatively inexperienced on the helicopter type, having the majority of his recent experience on more powerful and responsive types. On this occasion, the rate of cyclic application was too great and not compensated for by the collective input.

This accident was not the subject of an on-site investigation.

09 Sep 87, HUGHES 269-C, VH-PSK, Commercial — helicopter, ANNA PLAINS 20S, 07330 hrs
Whilst mustering cattle near a holding yard, the helicopter was being held in the hover in a 15-20 knot headwind. Because some of the cattle broke away, the pilot turned downwind to herd them back. As the aircraft rolled out of the turn it began to descend and the pilot attempted to arrest the sink by increasing collective. However, the helicopter continued downward and impacted heavily on the ground resulting in the tail boom being sheared off. It then bounced into the air and began to yaw rapidly but the pilot quickly and firmly placed it back onto the ground. When the helicopter came to rest the occupants were able to extricate themselves from the wreckage.

The pilot misjudged the performance that could be expected from the helicopter. When the machine was turned downwind, the sudden loss of lift resulted in a descent from which the pilot was unable to recover before the aircraft collided with the ground. The pilot reported that he believes he overpitched the main rotor during the recovery attempt.

Gliders

24 Jan 87, SCHEMP STD.CIRRUS, VH-GGC, Glider, KINGAROY QLD, 00490 hrs

During the approach the pilot became aware that the aircraft was going to undershoot the intended landing area. He adjusted the approach, however, the aircraft landed short of the aerodrome in a cultivated field and struck an earth bank.

Witnesses reports indicate that the air brakes had been deployed prior to the glider turning final. It is possible that the pilot was distracted by the other aircraft and forgot that the air brakes had been deployed during the approach.

This accident was not the subject of an on-site investigation.

26 Sep 87, SCHLEICHER K7, VH-GQX, Glider, BOWENVILLE QLD, 00269 hrs
The instructor stated that after a normal flight and circuit approximately half air brake was set for the approach. Additionally during the approach further air brake was set, for a short period, to steepen the approach. When the instructor then checked the indicated airspeed he observed that it had reduced to less than 45 knots. He stated that he did not close the air brake in time to prevent a heavy landing.

This accident was not the subject of an on-site investigation.

24 Jan 87, SCHLEICHER KA7, VH-GNX, Glider, WOODVALE VIC, 00014 hrs
The pilot had conducted a soaring flight for an hour in particularly turbulent conditions. The subsequent landing was conducted with a light crosswind from the right. The pilot misjudged the flare, and the aircraft ballooned to a height of about 15 feet, while veering to the left. The pilot then retracted the air brakes and the glider subsequently struck the ground heavily in a slight nosedown attitude.

This had been the longest flight undertaken by the pilot, and the weather conditions probably resulted in stress and fatigue. The landing flare had been made with rapid, rather than progressive, control movements. The pilot had then lost directional control, and while he was attempting to regain a normal glide attitude the aircraft had struck the ground in a shallow dive.

This accident was not subject to an on scene investigation.

30 Jan 87, GLASFLUGEL 206 HORNET, VH-GMU, Glider, SADDLEWORTH 4NW, 00205 hrs
The pilot was attempting a 300km cross country flight. After release from the aerotow the glider only achieved 3000 feet above mean sea level. As the flight continued no further height gain was achieved and on descending to below 2000 feet the pilot decided to carry out an outlanding. While the glider was being manoeuvred in the circuit, at about 50 feet above ground level, the right wing dropped and struck the ground.

The pilot had selected a landing field when flying with 2000 feet indicated on the altimeter. He was unaware that the terrain over which he was flying was 1000 feet above mean sea level and thus only 1000 feet below the aircraft. During the approach the aircraft became low and the airspeed decreased until the aircraft stalled at too low an altitude to allow recovery.

01 Feb 87, BURKHART ASTIR CS, VH-GDZ, Glider, BOND SPRINGS 4W, 00070 hrs
The pilot was carrying out local gliding in the Bond Springs area attempting to achieve a flight time of five hours which would qualify him for a Silver C certificate. He had flown away from the vicinity of the airfield in search of lift. On returning to the airfield he became aware that he would be unable to reach the airfield and selected the only suitable area to carry out a landing. The aircraft failed to make the selected area and struck a tree during the approach, subsequently impacting the ground on the right wing and slewing through 180 degrees before coming to rest.

08 Feb 87, GLASFLUGEL LIBELLE H201, VH-GYQ, Glider, BOND SPRINGS 3N, 00520 hrs
While returning to the airfield the glider experienced a deterioration of lift and the pilot decided to carry out a landing on the Stuart Highway. The pilot observed two vehicles on the road and attempted to warn them of his intention to land. The first vehicle stopped but a bus following, continued along the roadway. The pilot decided to land before reaching the bus. After touchdown the pilot moved the glider to the side of the road but the left wing struck a road sign then a tree. The glider slewed off the road and the landing gear was torn off.

The pilot was forced to accept a collision with known obstructions in order to avoid the bus. The countryside in the vicinity of the highway was considered unsuitable for an outlanding.

This accident was not the subject of an on-site investigation.

22 Aug 87, BURKHART ASTIR CS, VH-IKG, Glider, BORDERTOWN SA, 00050 hrs
The glider was being winch-launched from strip 36. During the launch, the left wingtip dropped into lush vegetation covering the strip. The glider rolled rapidly to the left around the wingtip, until it was inverted. It impacted heavily in this attitude and came to rest 96 metres from, and 15 metres to the left of the take-off point.

A 15-20 knot north-easterly wind was blowing at the time and the right wing was seen to lift as the left wing contacted a reasonably heavy cover of dandelions which were 30-40 centimetres tall. The pilot had activated the manual release and the winch operator stopped the launch when the glider adopted the acute roll angle, but both of these actions were too late for recovery to be achieved prior to impact. Due to soggy conditions, the gliding club had not used the strip for the previous 2 months, and had not mown the surface prior to recommencement of operations.

06 Sep 87, BURKHART TWIN ASTIR, VH-KYN, None, BEVERLEY WA, 00023 hrs
The pilot was carrying out a practice circuit. Although the approach was good, the flare was initiated too high. The pilot attempted to correct by lowering the nose, however he was late in initiating the second flare. The aircraft struck the ground and bounced into a nose high attitude. The pilot again lowered the nose which resulted in another bounce. The gear finally collapsed after the third ground impact.

The instructor assessed that the pilot's performance on earlier dual flights that day was of a sufficiently high standard to authorise him to do a solo circuit. However, on this circuit the flare height was misjudged and the technique used to recover from the bounced landing was incorrect.

Ultralights

03 Jun 87, MAXAIR DRIFTER XP503, NOT REG, None, HUNGERFORD QLD, 00200 hrs
The pilot had flown the aircraft to Hungerford to attend a Field Day. The following morning he adjusted the aircraft brakes and apparently decided to take the aircraft for a test flight. After taking off from the local racecourse, the aircraft climbed to about 150 feet above the ground before descending to fly just above the tops of the trees. The flight continued at this altitude until the aircraft struck a single wire power line and spun to the ground.

The pilot had discussed the presence of the wire with the owner of the aircraft prior to taking off. However, the wire was of small gauge and not easily discernible from the air.

29 Aug 87, DRIFTER XP 503, NOT REG, None, MERIMAN QLD, 01000 hrs
On arrival at the property, the pilot landed the aircraft in front of the homestead. A short time later he departed with the property owner on board for a cattle spotting flight. On returning to land, again in front of the homestead, the aircraft hit a single powerline, pitched nose up and fell to the ground inverted. The pilot stated that he was not aware of the presence of the powerline prior to colliding with it.

30 Sep 87, SKYCRAFT SCOUT MK 3, NOT REG, Student, BABINDA QLD 10N, 00838 hrs
The aircraft had previously had to be flown with the control stick displaced to the right of centre in order to maintain a wings level attitude. The aircraft owner advised a visiting ultralight pilot of the problem, who offered to attempt rectification. After conducting a flight to experience the problem first hand, the pilot adjusted the right wing warping wire and conducted another test flight. The adjustment had improved the trim problem but still not completely provided a fix. The pilot then readjusted the right wing warping wire to its original condition and added a D-shackle to the left wing warping wire to increase its length. Another test flight was carried out and it was found that the aircraft could only be maintained in level flight when full right rudder and full right control stick were applied. The aircraft was struck by a wind gust and the left wing dropped, as no further control was available to correct this situation, the pilot pulled a wing warping wire. Unfortunately he pulled the right wire instead of the left wire and was unable to correct his error before the aircraft struck the ground.

A subsequent inspection of the wreckage found that the right wing warping wire was 19 millimetres longer than the left. Also, all the dimensions of the right wing were slightly larger than that of the left wing, resulting in the right wing area being about 80 square centimetres greater.

17 Feb 87, SADLER VAMPIRE SV2, NOT REG, Private, WILTON NSW, 13549 hrs
The pilot was completing a 50 hour test flying program on the aircraft. Two previous sorties had been flown during the day, without incident. On this occasion, the pilot was conducting a glide approach, but when power was re-applied to go around, the engine delivered some 400 rpm less than normal. The pilot attempted to conduct a low level circuit, however the engine power continued to decay on the downwind leg. The turn onto base leg was conducted at about 100 feet, and shortly afterwards all power was lost. The aircraft landed heavily in a paddock.

A post accident test run and inspection of the engine found that the power loss was caused by a spark plug failure.

This accident was not the subject of an on-site investigation.

31 May 87, MAXAIR DRIFTER, NOT REG, None, TAYLORS ARM NSW, 00061 hrs
The aircraft had completed several successful flights during the day. At the completion of a power off descent, the pilot rapidly opened the throttle. The engine began running roughly and then failed completely. During the subsequent glide approach, for a forced landing, the aircraft collided with powerlines which crossed a gully about 350 feet above the ground. One line contacted the pilot's throat, inflicting severe lacerations, and the aircraft descended to the ground out of control.

An inspection of the engine did not reveal any defects that could have contributed to the occurrence. This particular type of engine, which has inverted cylinders, floods quickly with rapid advance of the throttle. This flooding with unburnt fuel, swamps the spark plugs causing the engine to fail.

25 Sep 87, ULTRALIGHT WINTON SAPPHIRE, NOT REG, Unknown/not reported, DOYALSON AIR PARK
The pilot had borrowed the aircraft from his brother to carry out some taxi training. He had previously flown gliders. After making about 20 runs along the strip the aircraft became airborne, the pilot decided to continue with the takeoff as he was uncertain if the aircraft could be stopped in the remaining available strip. The aircraft collided with trees at the end of the strip and became wedged in the tree tops. The pilot escaped from the aircraft uninjured and had to climb down the tree to the ground.

This accident was not the subject of an on-site investigation.

16 Aug 87, THRUSTER GEMINI, NOT REG, Commercial, WARRACKNABEAL VIC, 01640 hrs
It was the student's fourth flying lesson and the effects of power were being revised. The student turned the aircraft 90° to the left onto downwind but when he attempted to level the wings after the turn, the bank angle increased from about 30° to 50°. The instructor took over the controls and attempted to recover by applying right aileron, full power and holding the nose up briefly. When the aircraft did not immediately recover, the instructor lowered the nose but the aircraft struck the ground, in a left wing, nose low attitude, before full control could be regained.

After revising the effects of power, the engine speed was set too low for the aircraft to sustain level turn. The student maintained altitude by progressively applying up elevator and the instructor did not notice the incorrect setting because speed was assessed with reference to the ground in a 20 knot tailwind. The instructor delayed taking over the controls, because he thought that the aircraft was being subjected to mechanical turbulence generated by trees, over which they were flying.

31 Jan 87, THRUSTER GEMINI, NOT REG, Other (Foreign, Military, etc), KAPUNDA SA 7N, 00075 hrs
The pilot was carrying out his first cross country flight over unfamiliar terrain. After passing over one of his planned turning points he became concerned about the aircraft's location and decided to follow a road back towards the destination. Enroute the pilot descended the aircraft to read a road sign in an endeavour to establish his location. However, the aircraft struck a power line and subsequently collided with the ground.

This accident was not the subject of an on-site investigation.

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The low-down on fast jets

Squadron Leader John McCauley is a RAAF pilot from the Directorate of Air Force Safety.

TWO HIGH-SPEED aircraft operating at low altitude, crossed paths and collided. Wreckage was strewn for about a kilometre in both directions. Amongst the twisted fragments of metal were the broken bodies of two pilots. It happened near Townsville.

This collision was between members of the same group of aircraft who were briefed, aware and expecting to be in visual contact. The daily risk of mid-air collision from incidental conflict is very remote in Australia, but the horrific results of a collision should keep every aviator alert to the possibility. This article discusses some aspects of F-111 flying which might interest all pilots, particularly low-altitude operators — and assist their motivation for alertness and lookout at all times.

Is there a significant risk?

Since the introduction of the F-111 into the Royal Australian Air Force and Australian airspace, there has been much concern voiced at the risk of mid-air collision posed by this 35-tonne, supersonic, strike aircraft. Is the concern justified?

Yes!

Why? — because the F-111 has these characteristics:

- camouflage
- very high speed
- relatively poor cockpit field-of-view
- poor manouevrability or conversely, high momentum (by light aircraft standards)
- silent operations (no full reporting)
- operating in the heavily-used, low-altitude, east-coast region
- high crew workload (at times reducing lookout effectiveness)

Yes, we should be concerned about collision with F-111's. F-111 operators are as, or more concerned about the remote possibility of collision. Let us not single out the F-111 though — many of the points apply equally to other aircraft. For example, Ag pilots also operate in the low-level, high-workload environment.

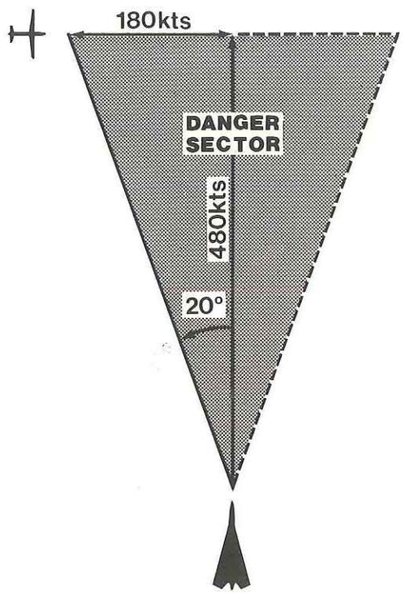
Each category of aviation has its own purpose and needs. Procedures which increase awareness, decrease the chance of collision and improve the safety of low level operations, must be established.

Such procedures must satisfy all concerned to the maximum extent — and that brings us back to the subject of F-111 mid-air collision risk.

What can be done?

Let us examine the points previously raised:

- Camouflage — there is an operational reason for the F-111 paint scheme. Hence the aircraft is difficult to see when you are looking down on it, over water, forest or dark backgrounds. Additionally, the F-111 has a small frontal area — making it difficult to detect if it's coming towards you.
- Speed — the aircraft simply cannot be flown at low speed. The very high, even supersonic, speeds that might be used in combat, create noise and over-pressure (shock-wave) problems, that are not acceptable around our country side. The compromise is a cruise speed of 480 knots. Interestingly, a high cruise speed results in a priority sector for crew lookout — an aircraft with a crossing speed of less than 180 knots that is outside the 20° sector (40° cone), will not collide. So the F-111 crew can emphasise lookout in this front 40°. (Naturally for operational training, lookout is practised through 360°)



- Cockpit field-of-view by military standards, is not good and is a function of the aircraft's design. However, by civilian aircraft standards, the view is not bad and crews are trained to put maximum effort into lookout.

  They are required to reach a high standard as part of their operational training and this includes special head movements and co-ordination of lookout between pilot and navigator as well as between aircraft in formation.

- Manoeuvrability is also a function of aircraft design, mass and speed — and 35 tonnes at 480 knots has a great deal of momentum to overcome. Thus its flight-path is very predictable and not easy to change, compared with light aircraft. Turn radius varies with configuration, weather and operational requirements but two to three nautical miles is typical.
- The periodic high cockpit workload and high groundspeed, make full reporting impractical. These speeds would require an F-111 to be almost continuously transmitting. Instead, to advise other aviators of the presence of F-111's, NOTAMs are issued for each flight. Flight service units broadcast the F-111 activity on appropriate area VHF frequencies. They also advise F-111 crews of known conflicting traffic. Crews maintain a listening watch on HF (the aircraft are not currently fitted with VHF). F-111 crews adhere closely to their advised tracks and times.
- The area and altitude of operations are governed by a few factors. Training requires that crews fly against a variety of simulated targets, day and night, in VMC and IMC, using different attack profiles. Hilly terrain is preferred to practice navigation and terrain shielding (using terrain to mask the F-111 presence from 'enemy' radars). Routes are varied also to reduce the exposure of residents to the jet noise. Most sorties are conducted in the south-east of Queensland and northern New South Wales — but they are periodically planned throughout Australia — as advised by NOTAM. Cruising altitude is generally above 10,000 feet agl and between 200 and 700 feet on a low-level sector. In the target area, a 'toss' manoeuvre (a pull-up followed by a wingover back to low level), is often used. The aircraft reaches about 4,000 feet in this manoeuvre which lasts less than 30 seconds.
- The high workload associated with IMC and night operations reduces lookout by F-111 crews. Fortunately, other aircraft do not operate in these conditions at low altitude, so the chance of a collision is virtually non-existent. In VMC, turn points and attacks require some increased cockpit activities, so lookout in the 'danger sector' is reduced for 30 seconds or so during this phase of flight. This occurs about three times during a two hour flight.

So far I have outlined some of the F-111's operating characteristics. All crews are very aware of the risk of mid-air collision (two aircrew died in September 1977 after a collision with a bird). Preflight preparation undertaken by the crews, specifically to avoid mid-air collisions includes:

- Study of charts which show sensitive areas (noise, particular industrial activity, intense crop-spraying areas, licensed airfields and other active airfields that crews notice during missions).
- Submission of routes the preceding day for NOTAM action.
- Reference to the flight planning section to note, amongst other things, any crop-spraying activity that has been advised.
- Preflight briefing of known conflicting traffic, lookout responsibilities, listening watch and HF frequencies.

In summary, an enormous amount of planning, training and administration goes into low-jet operations to improve safety margins and to minimise the risk of collision. The F-111 operators would like to think that other users of low-altitude airspace are equally concerned. From our perspective, there are a few things you can do to help. It is difficult to see an F-111 cruising at your level or lower, particularly since it may approach from any direction, so it is best to:

- Tell us where you will be and when, and we will try to avoid your area of operations (submit a flight plan, advise flight Service Operators or phone Amberely Operations on 07-280222 as many Ag pilots do now). We can contact our F-111 crews Australia-wide, at any time to relay such information.
- Find out where we are from our NOTAMs or appropriate VHF FS frequencies and avoid the area or time — or at least be alert for our presence. Remember we are busiest and most unpredictable at turn-points. These are shown on NOTAMs. On low-level legs, we are rarely above 1,000 feet, except at some targets where we also turn — hence it is safest for you above 1,000 agl or below 200' agl.

One point that should be made, is that in low-level attack training, we do not use the radar to detect and avoid aircraft. You may be aware of our air-to-air radar modes, but in low altitude attack missions, we use the radar only for navigation and terrain avoidance.

For us too, the 'eyes' have it!

The bottom line for VFR operations, is that we ALL must keep our heads OUTSIDE the 'office' and when we are advised of other traffic in the vicinity, use the information intelligently and ultimately:

- LOOK AFTER each other and LOOK OUT for each other □

Eyes in the back of your head

Brian Bigg is a journalist who has just gained his RPPL. Here he expresses his views on flying at Bankstown.

NATURE DID not consider student pilots when she gave us only one set of eyes.

Having recently passed my restricted licence test (relatively unscathed), I recommend that when a person walks off the street into flight school at Bankstown, he or she be presented (perhaps for a refundable deposit) with at least another two pairs of eyes for use in the circuit and training areas.

Even having extra rented eyeballs, however, won't prevent that heart-stopping shock of looking up from intently practising a tight turn to see another student, equally intent on practising a tight turn, whizz by within spitting distance (although, of course, by that stage one's mouth has gone completely dry).

Circuit views

The student's first solo sorties in the circuit at Bankstown, can take years off his life.

The feeling of 'flying is a doddle', that one gets after going solo for the first time, withers quickly when the twin overtakes you late on downwind while there are already eight planes in the circuit and the air is murky brown.

'How dare you?' you shout, indignantly. The diagrams in the textbook were quite clear on circuit procedure. As you wave your fist at him the first trickle of uncertainty creeps in.

A glance at the right hand seat reminds you that the instructor, from whom all wisdom emanates, is no longer there to clutch. A scream of 'handing over!!' had generally got you out of trouble before. But this is now...what should be done?

Forcing yourself to stay calm and being too unsure of yourself to call the tower for help, you extend the leg, turn too soon onto final, speed up to stay in front of the Cessna behind, and finally, too fast, too high and totally bewildered, decide to go around.

On one occasion this happened to me, I announced my decision to go-around just as another aircraft took-off from the strip at the other end on a touch-and-go. I ended up sixty metres behind him — both of us only fifty feet from the ground.

To make matters worse, at the same time my radio switch jammed on, so the tower couldn't contact me to find out if I was in control.

Everyone in the circuit could have heard me promise God a life of purity and piety if he would save me just this once. It taught me to be much more strict with myself in circuit procedures.

Worse was to await me in the training area.

Training area blues

Flying in the Bankstown training area is riskier than telling a heavyweight boxer you think his mother is ugly.

On the weekends, swarms of aviation hopefuls take to the air to practice forced landings, stalls and tight turns. One of my instructors told me he preferred not to go near the training area on Saturdays or Sundays because it was too dangerous.

At Hoxton Park, aircraft enter and leave the circuit at the same rate as cars cross the Harbour Bridge. Everyone appears to have a different interpretation of the proper procedure and in the murk that sometimes passes for air in Sydney, one's head cannot swivel fast enough on one's neck to cover all areas from which other planes will attack.

On one occasion, while joining downwind at 1250 feet agl, another aircraft overflew the airstrip across my path, no more than a stone's throw above me and believe me, if I'd had any stones with me he'd have copped one.

The other trap for young players in the busy skies of the training area is the lure of following a recognisible landmark, such as the pipeline which borders the Bankstown zone. The joy of discovering the easy way back to the airport is tempered by the realisation that everyone else has too.

The air above that pipeline is like Pitt Street on the weekends. One joker even practices forced landings along it. Aircraft come at you from all heights, while others going the same way as you, conveniently sit just in the blind spot underneath you or behind the wing.

If, as I did, you decided to abandon the pipeline and hunt further south for vacant air in which to practise, there's the chance of getting very friendly with someone practising aerobatics.

During my licence check ride, I had begun to stall the aircraft as per the CFI's instructions when an aerobatic aircraft dropped past my right wing having just been put in a stall from above me and a short distance away.

On one memorable day, I was returning to the airport and reported inbound at Prospect Reservoir at 1500 feet. Much to the surprise of the tower, two other aircraft also reported being at Prospect at the same height, immediately afterwards.

It came as a shock to me as well, but not nearly as much as finding one of the planes, a Cessna, close by on the right of my Tomahawk and slightly below me, so we couldn't see each other through our respective wings.

The other was above me and behind and I have since developed the belief I'm safer not flying on round numbers.

I've since moved to a less busy region but the habit I developed of treating the airspace as somewhere where every one is out to get me, still has me scanning right to left and back again the instant my aircraft's wheels leave the ground and I always check *underneath* the aircraft as I return from the training area □

A measure of success

by John Edwards

AVIATION SAFETY DIGEST 134 provided a series of articles on landing. Unfortunately, the presentation concentrated heavily on how to manipulate the aircraft and how to assess when manipulation is required. But that's only half the story. To balance the discussion, an article on the operational decisions and judgements is necessary.

Therefore, this article addresses the following questions:

- What landing performance does this aircraft have?
- How should I assess the approach and landing so that I achieve the predicted performance?
- What justification is there to deviate from the flight-paths and the techniques that form the basis for the predicted landing performance?

What landing performance do I have?

The basic answer to the performance question is found in the ANO 20.7 series. For most aircraft, the landing distance required is based on the landing distance that is needed, following an approach at a speed not less that 1.3 times the minimum speed (the minimum speed is the stall speed or minimum steady flight speed, in the configuration being used), and it assumes this speed is maintained to a height of 50 feet above the landing surface. The resulting distance is then multiplied by a safety factor.

However, this is not the complete answer. There are other considerations such as:

- What is the angle of the glidepath used during the determination of landing distance required?
- Are the pilots and techniques used during testing, representative of ourselves (an average, typical pilot if there is such a person) and the way we operate?
- How do the figures account for differing operating conditions such as wet runways, tailwinds and older aircraft with a little more wear on systems and tyres than the test aircraft?
- Are these considerations accounted for in the strength of the airframe and undercarriage?

The next keys to a complete answer lie in the ANO 101 series. Broadly, landing performance is established with the expectation of a three-degree glidepath in normal operations. The demonstrated landing distance is factored — to account for variables such as pilot reaction time, flying techniques and the condition of the aircraft's systems.

Other factors are applied for runway surface and meteorological variations and all structures are required to be strong enough to withstand a normal operational life under the conditions used to measure performance.

This is all very reassuring as long as the factors are large enough and the braking systems work correctly.

Firstly, the factors have been determined from experience and found adequate for the vast majority of operations and aircraft types. However, this does not mean that under extreme conditions, they offer a gold-plated guarantee. It means that they offer an adequate margin for safety without incurring unreasonable operational penalties.

Retardation systems are a little more complex. Duplicated or redundant systems are rare in a light aircraft as they would impose unreasonable weight and cost penalties — so these aircraft may have a single system. On heavier aircraft however, it is not unreasonable to have two or more systems and for these aircraft, landing performance is usually assessed on the basis that at least one of these systems is not used, but is in reserve — a built-in safety factor.

So there we have it. Landing performance data is not absolutely perfect, but it does account for most elements of most operations in a reasonable way — and if we fly our approach and landing to parameters close to those used to establish the performance data, we should stop safely in the prescribed distance.

Assessing the approach

Achieving the expected landing performance is heavily dependent on the approach being stabilised, on the correct glideslope being maintained and on crossing the threshold at the prescribed height. These requirements are easily met with the assistance of an ILS or a VASIS, but what about the other runways?

We are not quite as helpless as it may appear.

A simple calculation shows that a three degree glidepath which crosses the threshold of a level runway at 50 feet, will intersect the runway at a distance of 290 metres from the threshold. Fortunately, most runways have major markings at 300 metres and these provide an aim-point. Even if the runway is unmarked, pre-landing preparation and self-briefing can provide a good estimate by noting the runway length and determining the proportional distance of the 300 metre point from the threshold.

Judging a three degree glideslope without assistance, is a little more difficult. However, experience, a stable approach and reference to the VSI can provide a good guide. For most approaches, the pilot has a reasonable idea of the wind velocity and this enables an estimate of groundspeed.

The relationship between glideslope and groundspeed enables the pilot to calculate the expected rate of descent. The following table and formulae will help:

Groundspeed (knots)	90	120	150	180
3° path rate of descent (ft/min)	480	640	800	960

Rate of descent (ft/min) = Glideslope (degrees) x Groundspeed (nm/min) x 100

Rate of descent (ft/min) = Glideslope (percent) x Groundspeed (kt)

[A simple rule-of-thumb for a three-degree glidepath is to multiply the ground-speed by five to determine the desired rate-of-descent.]

Once the expected rate of descent is determined, the pilot has enough information to recognize if the expected performance is not being achieved — the most likely causes are an incorrect glidepath or an inaccurate wind assessment.

It is worthwhile examining the effect on landing performance if everything other than height over the threshold, is correct. An extra 20 feet for a three-degree glidepath means that the aircraft will touchdown 116 metres further down the runway than expected and so the landing distance is increased by this amount. (However, the determination of landing data accommodates threshold crossing heights up to 10 feet high — so this factor is not of concern unless the 10 feet is exceeded).

More importantly, the element that will invalidate landing performance more rapidly than any others, is excessive speed. Ultimately, landing distance is required to allow the braking systems to dissipate kinetic energy and as energy increases as the square of speed, small values of excess speed have a significant effect on the landing distance required. The speed that is necessary to ensure landing performance should be extracted from the flight manual.

What deviations are justified?

A short wait at the holding point provides an opportunity to watch landing performance in real terms. The variations in glidepath, threshold height and touchdown points are surprising. A glance into the pre-threshold area shows that not all touchdowns occur on the runway — and the range in tyre-mark sizes proves that short landings are not the exclusive product of one pilot or aircraft group.

Why is it then that pilots choose to approach and land in a way that fails to replicate the conditions necessary to ensure the validity of the landing data that is provided in the Flight Manual?

Firstly, let's look to see if the conditions of the performance data are realistic:

- What does the 50 feet crossing height offer us and what is the effect of the consistent glidepath? The threshold crossing height provides a buffer against touching-down short of the runway. It allows for mishaps due to turbulence on late final (the change of texture between the pre-threshold area and the runway frequently contributes to turbulence) and it protects against vertical position variations possible with 'on slope' indications from landing aids — e.g. with a three-degree glide slope and nominal 50 ft threshold height, the VASIS will indicate 'on glide-path' for crossing heights as low as 39 feet. The glidepath plays a major role in controlling the length of the zone on which touchdowns occur. As you can see, there are sound reasons for these factors and buffers.
- Are the selected values reasonable? PNG experienced people will recall that landing performance in that area, was predicated on a threshold crossing-height of 30 feet for some specially approved operators and pilots. We should recall that many operations in PNG would not have been possible if this type of safety compromise had not been made. At the same time, we need to recognise that operations in Australia do not have to accept this type of increased and avoidable risk — as that little extra runway length and 'normal margins' can be provided comparatively cheaply.

So, why do we see touchdowns on the piano keys? Common reasons are 'to turn off at a convenient exit and so minimise taxi time', 'runway behind you is unusable' and 'to demonstrate flying accuracy and aircraft control'. To this list we should add 'to take a risk'. Perhaps a pilot who deliberately crosses the threshold below 50 feet would be justified — if there was evidence to suggest that the factoring used in determining landing performance data was suspect. However, the significant weight of operational history does not support such a position.

Secondly, this pilot is accepting higher-than-normal risks immediately prior to and during the flare, to achieve a landing distance that is less than the distance both he and his aircraft require for normal, safe operation — and that distance was used to determine the acceptability of the strip in the first place!

Normal operations frequently include situations such as gusting wind or turbulence when it may be prudent to approach and land at an higher speed to ensure adequate control. Therefore, when speed increases are warranted, we should remember that it is the groundspeed on touchdown that will affect landing performance rather than IAS. Consequently, an increase in final IAS by a value proportional to the steady surface head-wind, plus a percentage of the gust factor, will not unduly jeopardise landing performance. It's a matter of relative risks — or risk management.

Occasions may arise when the total risk to the success of an operation can be minimised by deliberately accepting a slightly increased risk in one aspect of the exercise. However, where landing and landing performance is concerned, the only measured data available is presented in the Flight Manual, it is presented with the benefit of accumulated experience, it accounts for the factors involved in landing and combines them in a way that minimises the overall risk in that phase of flight.

Therefore, it must be wiser to conduct an approach and landing as closely as possible to landing performance criteria — and I can only conclude that pilots who cross the threshold low or high, from less-than-optimum approach paths or at speeds that are higher than necessary, are merely experiencing one of those slight inaccuracies to which we are all prone — or perhaps they can contribute yet another article to the *Digest* to ensure a complete and meaningful discussion.

Happy (and accurate) landings □

TRAPS FOR YOUNG PLAYERS

Trap 1

After a two-and-a-quarter hour flight the glider pilot entered the circuit and was distracted by a tug aircraft that was on final as he was on base.

He then realised that he was undershooting and to correct the problem, planned to land diagonally across the field to shorten his approach path.

This still resulted in an undershoot.

The aircraft touched down in a paddock short of the field and struck an earth bank at a speed of about 45 knots. The aircraft ground-looped and was substantially damaged.

The weather was fine and the wind was a light northerly.

The air-brakes had been deployed prior to the glider turning final. It was possible that the pilot was distracted by the presence of the other aircraft to the extent that he forgot that the airbrakes were still deployed.

Trap 2

The flight was to evacuate an ill patient from a property. The pilot had been advised by the property owner to land on a strip about two kilometres from the homestead, instead of the usual one.

He was also advised not to use the southern section of the north-south strip due to its rough surface.

The remaining available strip length was 1400 metres, which was adequate for the operation.

The pilot set up a short-field approach to the south, aiming to touch down on the threshold. The wind was calm and the visibility was good.

The aircraft became slightly low during the latter stages of the approach and the pilot applied power. He was not perturbed when he realised that the mainwheels would probably pass through some long grass near the threshold.

Just before touchdown, the pilot felt and heard a loud bang.

Immediately, the aircraft adopted a left-wing-low attitude and despite opposite aileron, brake and reverse on the right engine, the propeller and the left wingtip contacted the ground. The aircraft slewed through 90 degrees and left the strip.

The main oleo and left wheel were found 116 metres along the strip and 25 metres left of the centreline.

There was a concealed mound of earth in the long grass short of the threshold.

Trap 3

The pilot was engaged in spreading fertilizer on a forest. The airstrip being used was in a valley and to fly to the area of operation, the aircraft had to cross a ridge line. As the aircraft approached the ridge the pilot noticed that the aircraft was descending. He applied full power and jettisoned the load. However, the stub wing of the aircraft struck some tall trees below the top of the ridge and a short distance later, the forward flight of the aircraft was arrested when it collided with a large tree. The aircraft slid down the tree and became wedged between it and two other trees.

The pilot was able to evacuate himself from the wreckage and walk to the airstrip.

The pilot had previously taken 19 loads across the ridge-line en-route to the treatment area. He had been clearing the tree tops on the ridge by 30-60 feet on each run and planned to do the same this time. However, the pilot reported that as the aircraft approached the ridge-line, it encountered a downdraught.

Trap 4

Two Beavers were deployed for top-dressing operations. After operating normally during the morning, they stopped to refuel at about 1030 hr. The aircraft had been uplifting one-tonne loads about every six minutes. Fuel endurance with both tanks full was approximately two hours.

The pilot was conducting his 25th takeoff for the day, about one hour after refuelling. Witnesses observed that the aircraft did not become airborne at the usual point, two-thirds of the way along the 675 metre strip. Liftoff finally occurred at the end of the strip, but almost immediately afterwards, the aircraft clipped a fence. It was seen to sink slightly, before climbing at a steeper than normal angle, until some 250 metres beyond the fence.

At this point the nose dropped suddenly and the aircraft dived steeply into rising ground. Fire broke out and consumed much of the wreckage. Preliminary investigation revealed that the fuel selector was in the 'off' position.

The load was not dumped and there was no attempt to abort the takeoff.

This was the first occasion that the pilot had flown this particular aircraft, and the fuel selector in this aircraft was different to the other Beaver that the pilot had flown.

In the previous aircraft, rotating the selector anti-clockwise through 180 degrees changed the selection from the rear to the forward tanks. In the accident aircraft, a similar selection changed the selection from the rear tank to the off position. This difference had not been brought to the pilot's attention and it was possible that he was not completely familiar with the functions of the selector in this aircraft.

It was considered likely that the takeoff was commmenced with the selector positioned to the almost empty, rear tank. During the takeoff roll, the fuel-low-quantity-bell and associated light had activated and the pilot had changed the selection by feel while continuing with the takeoff. The selector was now in the off position and the engine stopped. The aircraft stalled from too low an altitude to permit recovery before impact. Perhaps the pilot had 'his head inside the cockpit' and was changing the fuel selection.

He was killed in the crash.

Trap 5

As part of a type endorsement, the instructor planned a practice forced landing. The simulated engine failure occurred at a height of 2800 feet over an ALA. The pilot completed the 'trouble' checks and changed the fuel selection from left to right tank.

During the descent the instructor was distracted by a distress call on the area frequency and consequently the engine was not exercised (cleared) during the glide descent. (The call had in fact come from his own aircraft as the student had inadvertently pressed the transmit button for his practice call as part of his 'trouble' checks.)

It then became apparent that the aircraft was undershooting and the instructor asked the pilot to go around. When the the throttle was opened at about 500 feet, there was no response.

The instructor took control at about 300 feet and concentrated on maintaining airspeeed. He left the gear down, flaps at 20 degrees and propeller in full fine. It was obvious the aircraft would still touch down short of the strip and the instructor flared the aircraft normally. The aircraft touched down about 90 metres short of the selected strip. The gear was torn off as the aircraft went through several spoon drains and the right wing was severed after collision with an ironbark fence post.

No mechanical defect could be found with the aircraft or associated systems. It was possible that plug fouling resulted from the prolonged period of idling and the lack of engine exercise during the descent.

After the abortive go-around, no attempt was made to change the aircraft's configuration to increase the chance of reaching the field.

After the failed response the pilots did not use the boost pump nor consider selecting coarse pitch to extend the glide.

The manufacturer of the aircraft cautions against prolonged idle power descents due to the likelihood of plug fouling caused by the carbon deposit associated with a rich mixture at low power.

The final cause could not be determined but fuel mis-selection was also possible.

AIRFLOW

Dear Sir,

I refer to the cover photo of ASD 134 and your caption suggesting that the F28 in the picture is making a go-around.

The aircraft is not in fact making a go-around, but is being purposely held down after takeoff for the photographer.

For a two-engine go-around in the F28, the aircraft must be rotated to 15 degrees, max power applied, and the flaps selected from 42 to 25 degrees. When a positive rate of climb is achieved, the gear is selected up and normal climb segments followed.

Clearly this is not the case here as the aircraft is flying level with both engines at substantial power and the flaps in the latter stages of retraction.

I myself have a blown-up, framed copy of this fine shot which was taken at Tennant Creek in the NT.

One would hope that the photographer had good ear protection!

Yours faithfully,
A. Kiiver

You are correct. John Raby also chastised me. I used this rather dramatic photograph to attract interest and to promote discussion. Rather than use it to illustrate how to carry out a go-around in an F28, I intended it to convey a 'too-late' go-around.

But I take your point. I would not want it misconstrued.

One aspect that is well illustrated though is the vortex pattern downwind of the aircraft — and the reason for the holding-point being well clear of the runway.

Dear Sir,

I should like to correct an error of fact which is present in the 134th edition of the *Aviation Safety Digest*. Mr Rudolf's statement at page 22 that 'the RAAF did not take into consideration the properties of the SPH-5' when acquiring a new helmet is incorrect. On the contrary, the SPH-4 Product Improvement Program, which culminated in the SPH-5, was closely monitored from its inception both through direct contact with Gentex International and the auspices of Working Party 61 of the Air Standardisation Co-ordinating Committee — an international body of specialist, military, aviation medicine advisers and researchers. An alternative helmet to the SPH-5 was selected for Australian Defence Force, non-fast, jet aircrew simply because it met the required project specifications and timescale more appropriately than the Gentex product.

The Australian Defence Force continues to support the efforts of industry to further enhance aircrew protection, and Mr Rudolf's comments encouraging aircrew to persist in wearing their life support equipment are endorsed.

I should appreciate your publishing the essential details of the first paragraph of this letter in order that the record may be set straight.

G. R. Peel
Wing Commander
for Chief of Air Force Personnel

Thank you, Graham, for setting the record straight. I think our industry, especially the Ag operators, would be most interested in the RAAF and ASCC Reports if they are releasable.

It's a fairly dark and moonless night as we reboard our aircraft at Port Pirie for the return flight to Parafield. A few clicks of the mike and the place lights up, like a Christmas tree — wonderful invention, PAL.

Taxi call to Adelaide FS made and acknowledged and we head down the runway and up into the inky-black. A quick look back at the lights as we set heading, I check a few figures and give the departure call to Adelaide FS.

No answer.

Try again. Oh, oh! Out with the ERS and we make a few quick calls to other FS frequencies. Nothing.

Another problem. It's a dark night with no horizon. Every time I look at the radio or ERS I start a turn [no auto-pilot]. Good thing there's another pilot on board. I fly, he fiddles.

I look back at Pirie again. The lights are out by now. No comms and therfore no way to reactivate them. What to do now?

Continue flight as per flight plan and hope for something good to happen when we reach bright lights. The transponder gets a thought. We squawk 7600 and hope someone sees that. Bright spark in the right-hand seat suggests the ADF may be worth listening to. On it goes and — BINGO!

"Alpha, bravo, charlie, this is Adelaide. You are cleared for direct track PIR to PF according to flight plan. Maintain 5000. We are receiving your transmission. Acknowledge my transmissions and listen out on ADF".

Wonderful! Big brother is listening and watching for us. The flight proceeds normally with the message changing once to tell us to overfly Edinburgh and when to descend for PF, whose tower by now is not manned. Approaching ED we are surprised by a burst of noise over the radio. Terrific.

AIRFLOW

'Adelaide, this is ABC, we are back on air'.

'ABC this is Adelaide, welcome back to the fold'.

And the rest of the flight proceeded with normal communications and a safe arrival at PF.

Moral to the tale: all is not lost if you have a radio failure at night. Big brother can help if you remember to listen out on the ADF. Having another pilot on board removed much of the stress that could have been experienced under the conditions at the time and aided the safe completion of the flight.

I hope this tale helps a fellow pilot.

Best wishes,

Adrienne Williams.

Thanks, Adrienne. You make several important points and I particularly endorse your comments regarding the presence of another pilot to reduce the workload. And perhaps 'big brother' is not such a derogatory term after all.

Dear Sir,

I would like to draw attention to an area of risk that could result in a mid-air collision.

The problem of unnotified traffic conducting aerial work at navigation aids, OCTA, has once again surfaced. Two aircraft operating over Redland Bay NDB near Brisbane were recently involved in a near miss in VMC. The aid is situated OCTA and the pilots concerned were not aware of each other's presence. In this instance, the see-and-avoid concept worked. Both pilots had advised Flight Service of their position over the aid and their intentions to conduct AWK, but were 30 minutes apart in arriving over the aid. The first aircraft to arrive was a NOSAR aircraft and as such, did not generate a Flight Strip with the Flight Service Unit. Additionally, the Flight Service Officers had changed shifts in the period between the arrival of each aircraft over the aid so that the officer on duty at the time the second aircraft reported its arrival was not aware of the first aircraft and correctly advised 'no known traffic'.

Notwithstanding the fact that the pilot of the first aircraft should have heard the second aircraft report over the aid and that both safety pilots should have been keeping a good lookout, an aid is a point of convergence rather like a road intersection — and that is where collisions occur because that is where the traffic is.

The obvious fix is for pilots to be encouraged to submit flight plans and to operate on full reporting for instrument training flights, thereby ensuring their presence is known to Flight Service and can be passed on to other traffic in the same area.

R. L. Williams

You have highlighted an area of real concern. I know that near Canberra, the Yass and Goulburn NDB's are in the same category — as are the Stonefield and Ardrossan beacons in South Australia.

Let's all treat instrument training as the real thing and submit a flight plan.

Dear Sir,

You may find the following of interest to readers of *Aviation Safety Digest*.

Several days ago I was required to fly from Sydney to Canberra on business. I was unable to rent my usual aircraft and decided to try something new; the TB-20 Trinidad. After being checked out, I filed my flight plan, met my passenger and we boarded the aircraft.

Takeoff was normal and on leaving the Bankstown zone, I altered heading, commenced a cruise climb to 2000 feet OCTA and changed frequencies.

No other station appeared to be using the Sydney frequency, although the squelch did not appear to fully 'quiet' the receiver.

I then gave a departure call to Sydney FSU. No acknowledgement, but the frequency was still quiet.

I tried again; still no answer. (All hands having a cup of tea?)

I tried again; still nothing.

At this stage I decided I may have a radio problem and turned to advise my passenger that we may have to return to Bankstown.

He was in deep conversation using a portable cellular radio telephone.

I asked him to switch it off, which he did, and the radios immediately leapt back into life.

I gave my departure call, which was acknowledged by Flight Service, who then proceeded to berate me for not keeping a listening watch and for transmitting over other stations.

I did not notice if the radio navigation aids were effected but expect that they would have been.

Portable and mobile Cellular Radio Telephones transmit in the frequency range 825 MHz and receive from 'cells' on frequencies from 870 MHz to 890 MHz. The unit which interferred with my radio had a power output of less than one watt.

Mike Norman

Thanks for the warning, Mike. I'll see if other pilots have had similar problems.