



Aviation Safety Digest



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Covers

Featured on the cover is the first Piper Mojave imported into Australia by Pacific Aviation. The Mojave still had its American markings when this photograph was taken, but is now listed on the Australian Register. The photographer was Mr Ron Israel of Sydney, who used a Pentax 6x7 cm, 105 mm lens. Fujicolour.

A contrast provided by the 1930 photograph of the Southern Sun over the incomplete Harbour Bridge on the back cover.

Dangerous circuit entry

The holder of a Restricted Private Pilot Licence with about 120 hours total flight time had arranged to take three friends on a short sight-seeing trip in a Cessna 172. As he had not flown before with the organisation from which he was hiring the aircraft—and in fact had not flown a C172 for about eight years—the organisation's CFI first required him to undertake a dual check. This consisted of a circuit and landing; the pilot was assessed as proficient and was authorised to hire the Cessna.

Following the check the passengers boarded the aircraft. As the aerodrome was uncontrolled the pilot made an 'all stations' call on the area VHF frequency before taxiing. He estimated that the wind was coming from the west at 5 knots, which meant that it was blowing directly across the runway, 16/34. A normal takeoff was made from runway 16.

The aircraft was flown in the local training area for about 70 minutes, and then returned to the aerodrome with the intention of carrying out a fullstop landing. As the pilot considered the wind conditions to be unchanged since departure, he joined the circuit on crosswind for 16. He did not make an inbound 'all stations' call. No other circuit traffic was sighted and after a normal circuit the C172 was positioned on final approach for 16 at about 70 knots with full flap extended.

In fact a Beech C23 Sundowner and a Cessna 182 were carrying out circuits at the time—on runway 34. As the C172 reached about mid-final approach for 16 the Beech was just becoming airborne from a touch-and-go. The pilot-in-command of the Beech, who was an instructor, saw the C172 and immediately initiated a turn to the right to make way. He also transmitted a call to the Cessna pilot, telling him what he was doing and that he would remain clear.

The C172 pilot later stated that he saw an aircraft take off towards him and then turn right. He also heard the radio transmission but could not understand it.

Given the circumstances, he decided to go around and carry out another circuit. He said that he applied full power and commenced a gentle right turn. Then, at a height of about 40 feet, he fully retracted the flaps in one selection.

The Cessna descended rapidly until it impacted with the grass surface between the runway and the parallel taxiway. Impact was made in a slightly left wing down, level attitude at a relatively low forward airspeed. The aircraft skidded for about 30 metres before coming to rest inverted. The four occupants escaped unaided through the right side window.

Analysis

At the time of the accident the weather was CAVOK, with a temperature of +25°C and a wind of 250/05.

The pilot's inexperience was considered to be a relevant factor in this occurrence. With only 120 hours total flight time, and not having flown a Cessna 172 for

eight years, he had neither the familiarity with his aircraft nor the broad overall experience to fall back on when the situation started to become difficult.

His problems began when he returned to the circuit and, by failing both to broadcast his intentions and maintain an adequate lookout, did not determine that other aircraft were now operating. Given the light wind, it should have been quite clear to the C172 pilot that if other aircraft were in the circuit, either runway could have been active. As it was, his lookout was poor and he did not see the Sundowner until it had become airborne and was turning right.

The actions taken by the Sundowner's pilot would have permitted the C172 to have completed the landing on runway 16 safely. However, the Cessna pilot decided to go around, in the course of which his faulty flap retraction technique then completed the chain of events contributing to this accident.

The Cessna 172 Pilots Operating Handbook states that for a go-around, wing flaps should initially be retracted to 20°. Once airspeed has been increased to a safe climb figure, the remaining section of flaps should then be retracted slowly. In this case, the retraction of flaps fully in one movement, at a low speed and height, caused a rapid loss of lift and precipitated the crash.

Postscript

The accompanying photograph is of the window through which the pilot and his passengers escaped. Note the heavy tie-down stake and chain lying loose on the aircraft's roof. There is little doubt that in less fortunate circumstances this dangerous, unsecured object could have inflicted fatal injuries when the aircraft struck the ground ●



Position aircraft to cross up-wind end of runway in use at 1000 ft above aerodrome elevation. Watch for conflicting traffic on cross-wind and down-wind legs.

On reaching the non-traffic side of circuit, turn in circuit direction and commence descent.

UP-WIND LEG

CROSS-WIND LEG

Departing high performance aircraft could pose hazard.

Correct for drift on cross-wind, down-wind and base legs to maintain 'square' circuit pattern.

1000 ft

DOWN-WIND LEG

Overfly field at not less than 500 ft above circuit height. Note circuit direction and surface wind.

Aircraft to be lined up on final approach by time aircraft has descended to 500 ft.

At 600 ft or higher, commence turn on to final approach.

500 ft

600 ft

BASE LEG

On completion of turn on to base leg, commence descent from 1000 ft.

1000 ft

1500 ft

Prior to joining, check:
Beacons 'ON'
Strobes 'ON'
Landing lights 'ON'

There's no substitute for overflying the field, especially if it's unfamiliar. When orbiting overhead, maintain not less than 500 ft above circuit height.

HOW ARE YOUR CIRCUIT ENTRIES?

Correct circuit procedures assist you to see and be seen, thus reducing the risk of collision.

POL maintenance

The acronym POL stands for Petroleum-Oil-Lubricants and is a generic term for those essential fluids we put in our aircraft. POL can, however, do more for us than providing fuel and lubrication for engines. A pilot who carefully monitors the way or rate in which a particular aircraft burns POL may, by detecting changes in the amounts being used, get an early warning of a potential mechanical problem.

Periodic maintenance inspections are intended to ensure continuing airworthiness and trouble-free flight, and in most cases they do. Nevertheless, mechanical failure can still occur since it is not possible to foresee all of the various circumstances which could interfere with the normal operation of an engine, a propeller or structural members (regrettably, operation outside the manufacturer's limit is one factor which emerges regularly in this context).

There can also be potential problems which escape a pilot's notice, even during a careful preflight inspection, because they are not apparent under static conditions.

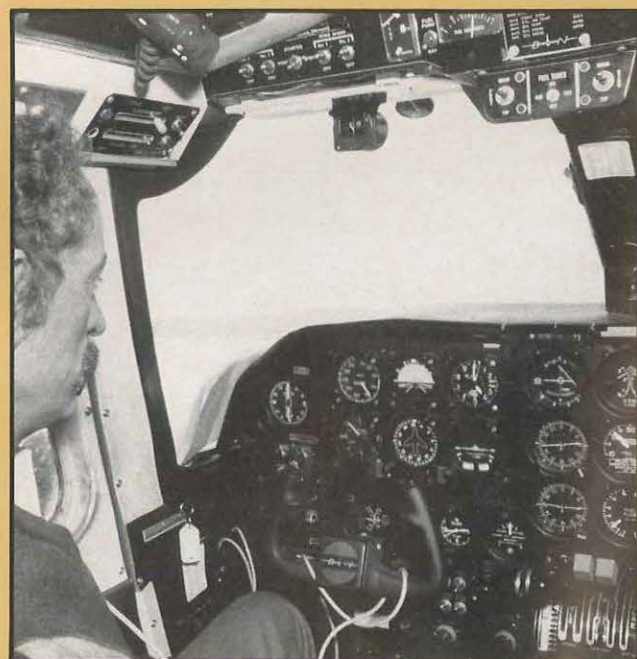
The pilot who rarely, if ever, has a maintenance-related accident is most likely to be the one who is *quick to notice any subtle change in his aircraft's performance*. Aircraft, like people, are pretty much creatures of habit; and their behaviour is quantifiably measurable. A given power setting in a given takeoff configuration should result in specific takeoff performance (acceleration time, runway distance used, and so on). Similarly, predictable performance parameters should also be achieved during the cruise, approach and landing.

Because specific performance figures should be achieved, slight, sometimes very subtle changes in the expected numbers, are often clues that something odd is going on, some kind of trouble is brewing. Good operational maintenance consists of paying attention to such changes while flying the aeroplane, analysing them — and then if necessary doing something about them in time.

Monitoring POL

Flight instruments and engine gauges are not the only measuring devices in an aircraft. A sharply increasing rate of fuel consumption, for example, should not be dismissed as simply an indication of advancing wear. High fuel usage could mean that an engine is suffering from loss of compression, burnt valves, bad plugs or points, worn magnetos, a fuel system leak, and so on. Whatever the cause may be, as long as the symptoms are recognised, the aircraft can be checked out before engine problems arise on a dark night during an instrument approach.

Just like pain in the human body, substandard mechanical performance in an aircraft is a sign that something is wrong and requires attention. In order to be tuned in to what is going on with the various systems of an aircraft it helps to keep records. (You do not need to be a LAME to do this.) It seems inconsistent that some owners are very concerned about the price of the fuel they buy, yet cannot be bothered to chart fuel consumption rates. There are instances on record of excessive consumption rates, which were not recognised by the pilot, resulting in inflight emergencies. Some



occurrences have been caused by things as simple as an ill-fitting fuel cap. Whatever the cause, the imperative is to recognise the symptom and take remedial action in time.

As another example, some pilots may think that the amount of lubricating oil an engine uses may be of little consequence as long as the engine gauges stay in the green: oil is relatively cheap and can easily be topped up by any pilot, so what difference does it make if you have to add two quarts instead of one every thousand miles?

The difference can be important. Although aircraft engines have a relatively large oil reservoir — typically about 8–10 quarts for a piston-driven single-engine aircraft — the normal usage rate established by the manufacturer may be as low as ¼ pint per hour of operation. (Acceptable usage rates can be found in the manufacturer's operating or maintenance instructions.) Oil is the only internal source of cooling for aircraft engines, and any decrease in the quantity present means a corresponding increase in the engine temperature.

Oil can be lost or simply 'missing' for a number of reasons. Worn components, such as bearings or valves, can cause problems. Another common cause is that of not replacing the oil filler cap after maintenance or topping up the reservoir. There are also recorded incidents of sumps not being refilled after an oil change.

An occurrence of the latter kind happened to the owner of a Cessna 172 which had just been given an engine overhaul and a new paint job. As a last step in the engine maintenance the mechanic drained the oil, replaced the filter and was about to add oil when he was

called away by a long distance telephone call. He asked his partner to add the oil. The partner agreed and headed off in the direction of the Skyhawk.

An hour later the owner came by, found his 'like new' aircraft parked out on the ramp, and decided to take it for a quick trial flight. He performed a preflight inspection, somewhat perfunctorily in view of the fading daylight and the fact that the aeroplane was fresh out of the shop, and took off. The engine ran like a charm for about 3 seconds after liftoff — then in rapid succession ran roughly and seized up. Fortunately the pilot managed to get the 172 back on the ground without further damage.

There was no oil in the engine. The initial fault was the mechanic's, but the pilot also had not checked the contents level during his preflight inspection.

Even though the pilot and the mechanic had both committed fundamental inspection errors, opportunities still existed for their omissions to have been detected before the Cessna took off. For example, it appears that in his eagerness to get airborne the pilot had not confirmed that his oil pressure gauge was indicating 'in the green' within 30 seconds of start up. A second opportunity to detect the maintenance omission must also have been missed during the engine run-up: given the lack of oil in the system, the oil temperature gauge should have been indicating a serious overheat by that stage. (A cylinder head temperature gauge, if fitted, would have given an even earlier warning of engine overheating.) Finally, good airmanship dictates a final before-take-off scan of the engine instruments as takeoff power is applied, so that the pilot has time to abort if abnormalities are noticed.



Typical problems

A review of Australian accidents and incidents attributable to the kind of problems discussed in this article revealed the following typical factors:

- A pilot reported that he had been unable to reduce engine rpm with the propeller control. Inspection showed that a low oil level had caused damage to the engine with a resultant drop in oil pressure. The pilot did not know the correct oil level required in the engine.
- On its first flight after a major inspection a C172 experienced a complete loss of engine power. Improperly installed filters and screens had allowed all oil to escape after 15 minutes of flight.
- One engine of a Rockwell 690 had to be shut down during a charter flight when it began to run roughly. The pilot had knowingly accepted the aircraft with an inoperative oil pressure gauge and was not aware that a serious oil leak existed.
- When a PA34 pilot failed to secure one engine's oil filler cap during his preflight inspection, the cap came loose in flight, oil was lost, and an engine shutdown became necessary.

Inflight

The green arc of an oil temperature gauge is fairly small but is adequate for a pilot to detect a change in the position of the needle in flight. A normal reading is not necessarily dead centre since the operating temperatures of engines vary. What is significant is:

- a higher than normal reading;
- a progressively increasing reading on the temperature needle; or
- an absence of pressure when the engine is operating.

Oil temperature and pressure gauges are often small and relatively inconspicuous instruments. Because their readings almost always are steady and normal, a tendency can develop not to include them in the instrument scan as often as is desirable. But they provide the key insight we have into the core of an engine, and we cannot afford to ignore them if we wish the propeller to keep turning. If you are scanning your gauges regularly in flight you might notice the temperature gauge climb into the red and the pressure reading zero as the oil dissipates, perhaps in time to divert to the nearest landing area; but if your first indication of trouble is the sound of a rough-running engine, the time remaining before your powered aeroplane becomes a glider is likely to be very short.

Summary

A little bit of careful monitoring of POL usage rates can go a long way both in terms of understanding an aircraft and accident prevention. Attention to contents and indications is required on the ground during inspection, and in the air; while a few minutes spent on a post-flight assessment of consumption rates can be handsomely repaid ●

Alertness and communication

Photograph courtesy of Mr Colin Addis



Aviation is characterised by the high degree of co-operation and good spirit among those who are involved in it, either as a job or for recreation. Perhaps more than most activities, it enjoys an ethos of mutual help. The importance of this was graphically illustrated in an account of two incidents recently published in the U.S. magazine *Flight Safety Digest*. As that magazine stated, the alertness and prompt communications of two otherwise-uninvolved flight crews prevented possibly tragic accidents.

The incidents

Both of the incidents are reported in the words of the flight crews involved.

- 'Our wide body aircraft was moving onto the active runway for takeoff when the crew of another aircraft informed us that we had two spoilers on our left wing in the FULL UP position. We cancelled the takeoff and returned to the tarmac for a maintenance inspection.'

'Two spoilers on the left wing were jammed in the FULL UP position and would not return to the normal position. Cycling controls, switches and the systems did not help . . . There is no cockpit indication of this system.'

'The follow-up from maintenance was that the control rods from the spoiler mixer were dry and needed lubrication.'

'Recommendation: Pre-flight inspections should include an inspection of the top of both wings to ensure the spoilers are flush.'

- 'A wide body air carrier was on final approach and

cleared to land on runway 25R. A small aircraft had been cleared to land on runway 24R but mistook his runway in restricted visibility and headed for 25R. The runways are 6000 feet apart, and the respective tower frequencies are not common.

'The small aircraft was below and slightly ahead of the wide body—both headed for the same runway. As it looked like a collision might occur, the crew of another air carrier parked at the end of the taxiway for 25R broadcast a warning on tower frequency. No reply.'

'They then broadcast for the wide body to take it around—as the small aircraft had just landed ahead of it. At about 100 feet AGL, the wide body went around.'

'The tower was unaware of the incident until they saw the small aircraft on the ground and the wide body going around. There was no question in the mind of the parked aircraft's crew that, had the wide body landed, it would have demolished the small aircraft.'

Comment

These incidents contain a host of important lessons. None is more significant than that of the incalculable value of vigilance and effective communication. Numerous potential accidents have been averted through the timely action of apparently uninvolved individuals, ranging from engineers and pilots to casual observers with no aviation background. We all have a role to play in aviation safety at all times. One day, we may be in the aircraft at risk ●

Currency and aircraft knowledge

A glider pilot with about 60 hours total flight time was planning to make an aerotow launch in a Schneider ES 60. He had half an hour's previous experience on the ES 60 and had not flown it for three months. Whereas every other glider type the pilot had flown had the trim control on the right hand side of the cockpit, the ES 60's was on the left side, adjacent to the airbrake control. The airbrake and trim controls were of different shapes to facilitate distinguishing between them.

Conditions were fine when the aerotow was made in mid-afternoon, with good thermal activity reported up to at least 4500 feet. The tow rope was released at 2000 feet AGL and the glider pilot completed a turn to the right. He was disturbed to note that, although at gliding speed, the Schneider was sustaining a sink rate of about 10 knots. In an attempt to redress this he headed for a pine forest over which he expected to encounter best thermal activity.

En route to the forest the glider overflew the aerodrome, from which observers noticed that the airbrakes were fully open. Although the Schneider was fitted with a radio the club base station was not in use so communication was not possible.

When the sink rate did not reduce over the pine forest the pilot decided to head back to the aerodrome. At this stage his aircraft was at a height of about 900 feet AGL.

It soon became evident to the pilot that he would not even reach the aerodrome, so he selected an open paddock and began to set himself up for an outlanding.

A right turn was made to position the aircraft to

land downwind in the paddock but shortly after the pilot rolled out of this turn the glider struck one of several tall pines on the edge of the paddock.

The ES 60 continued to descend and struck the ground heavily before cartwheeling for some distance. It was destroyed and the pilot seriously injured.

Analysis

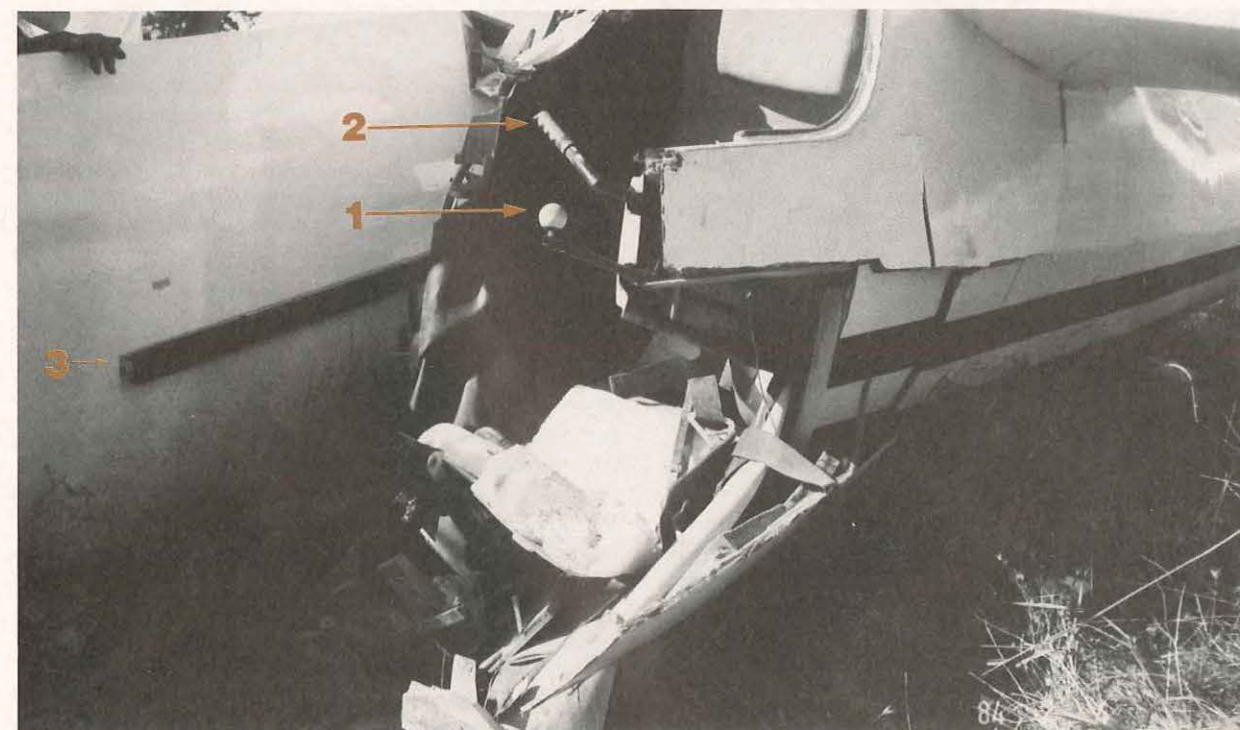
Determining the reason for the glider's excessive sink rate was straightforward. It appears that as the glider's airspeed was reduced after the tow rope was released, the pilot attempted to apply 'nose-up' trim; instead, he mistakenly operated the adjacent airbrake control, extended those brakes, and began to go down instead of up.

There was, of course, more to the accident than that one factor. Other significant points were noted during the investigation and related to:

- the pilot's general inexperience;
- his inexperience on type;
- the proximity of the trim and airbrake controls; and
- the pilot's failure to analyse the glider's performance loss, and to identify the characteristic airframe buffet associated with extended airbrakes.

Summary

Essentially this accident revolves around currency and knowing one's aircraft. These are matters which no aviator can ignore: they demand the serious attention of all pilots, supervisors, training establishments and those responsible for determining standards ●



Rear of cockpit. Note trim knob (1) and airbrake lever (2). Airbrake on right wing (3) has been pushed in by contact with fuselage after landing.

systems knowledge

A Cessna 210-N with five people on board took off in the mid-afternoon on what was to be the final leg of a two day trip. Throughout the trip the pilot had noticed that undercarriage retractions were taking about twice as long as usual. Notwithstanding that, the gear did retract following the final takeoff and the gear UP light illuminated.

About 30 minutes later, with the Cessna established in the cruise at 7500 feet, the pilot noticed that the autopilot had tripped and that a high battery discharge rate was indicated. Also, the digital numbers on the radio had gone very dim.

On checking the electrical panel the pilot observed that the alternator had dropped off line and the gear pump circuit breaker had popped. He reset both services. Initially a high charge rate was indicated, signifying a low charge level for the battery.

A short time later the gear pump circuit breaker popped again. The pilot reset it for a second time and, to test the system, cycled the undercarriage selector switch. The circuit breaker remained 'in'. However, coincident with the action of the cycling gear, an unusual noise commenced. Not able to recognise the noise, the pilot concluded that it was originating from the engine.

At this stage, the pilot's problems started to mount. A pungent odour became noticeable in the cockpit and smoke appeared from the centre console area. The pilot turned off some of the non-essential electrics but the smoke became thicker. Then a substance which seemed to be either oil or molten plastic became visible, dripping on to the fuel selector. Deciding that he had an engine fire the pilot transmitted a Mayday call.

All electrics except the master switch were turned off and a descent commenced with gear and full flap down. The gear had been selected normally (i.e. not using the emergency lowering method), and while the pilot did not see the green gear DOWN light illuminated, a visual check outside indicated that at least the two mainwheels appeared safely down.

What looked like a short, disused airstrip was noticed almost directly below, so the pilot decided to land there. Because his assessment was that the strip was too short and therefore an overrun was likely, he elected to land with a tailwind, approaching over the top of timber, stockyards and creek, to avoid the possibility of colliding with those obstacles at the end of the landing roll.

Just before landing the pilot turned off the master switch. The smoke stopped immediately. At the same time he shut down the engine by pulling the mixture control to idle cutoff.

Touchdown was made at about 60 knots, 270 metres into the strip (which subsequently was measured as 416 metres long). Heavy braking was applied but the aircraft overran the strip, the last 100 metres of which had a slight down-slope. The pilot was aware that the chosen landing direction was towards a shallow gully and, concerned that the Cessna might overturn if it entered the gully, decided to stop the aircraft by deliberately hitting a tree. Still travelling at some 40 knots, he struck an 8 metre gum tree with the left wing.

The 210 slewed to the left and broadsided to a halt

130 metres beyond the strip. AVGAS from the ruptured fuel tank in the wing showered over the aircraft's occupants, but fortunately there was no fire. The pilot and passengers rapidly evacuated the wreckage.

Some minutes after the crash the pilot activated an ELT. When search aircraft arrived in the area he turned on the Cessna's master switch so that he could use the VHF radio.

The systems

Although the pilot had noticed after each takeoff that the gear retraction time was abnormally long, he did not investigate the reasons, nor did he ask any maintenance organisation to check the system.

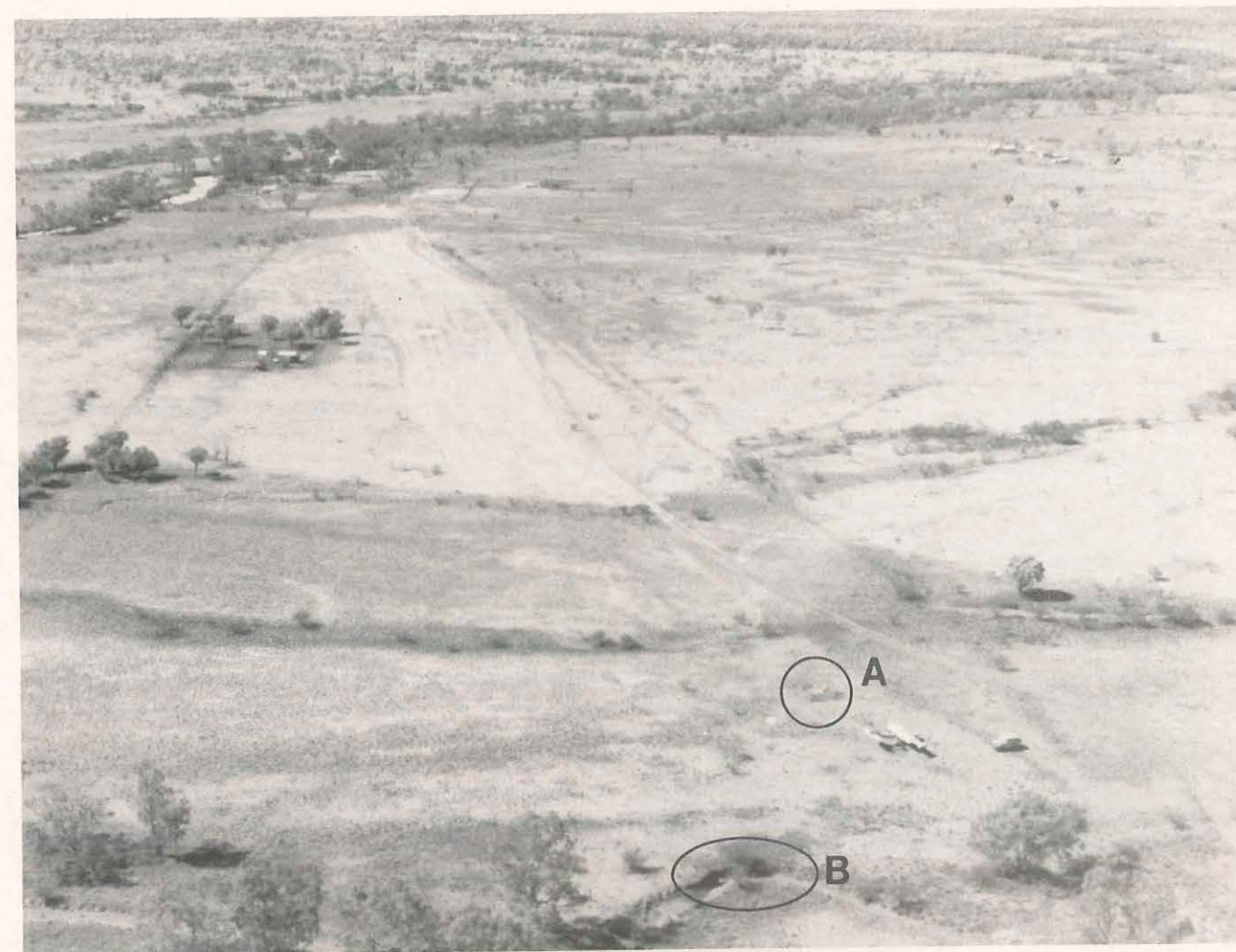
A brief description of the C210-N's hydraulic system is necessary here. Hydraulic power is supplied by an electrically driven power pack located behind the control pedestal in the cockpit. The power pack's only function is to supply hydraulic power for operation of the retractable landing gear. This is achieved by applying hydraulic pressure to actuator cylinders which extend or retract the gear and operate the gear down locks. The hydraulic system normally operates at 1000 psi to 1500 psi and is protected by relief valves which prevent high pressure damage to the pump and other components in the system. The electrical portion of the power pack is protected by a 35-amp 'pull-off' type circuit breaker (the 'gear pump circuit breaker' referred to above in the accident summary).

The significant aspect of this in relation to the accident is that the electric motor-driven hydraulic pump in the power pack is only intended to operate for the very short periods when the undercarriage is being lowered or raised: at all other times it should automatically cut out. As the pilots operating handbook advises, excessive running of the hydraulic pump may damage the power pack because of overheating.

As it happens, a post-accident stripdown of the system revealed that a leaking seal had allowed oil to get into the electric motor, causing internal damage. This damage eventually prevented the power pack from reaching the 1500 psi cutout pressure.

It seems that when the gear selector switch was moved to UP after takeoff the undercarriage retracted satisfactorily. However, because of the internal damage to the electric motor, at either that time or shortly afterwards when the pilot recycled the undercarriage and started resetting the gear pump circuit breaker, the electric motor did not cut out. The hydraulic pump therefore began to operate continuously, which explains the unusual noise the pilot heard and mistakenly ascribed to an engine abnormality. Additionally, because the hydraulic pump was operating continuously it placed an excessive demand on the alternator, eventually exceeding its capacity, which explains the popped circuit breaker and the low battery charge level.

To a considerable extent, the dangerous sequence of events which followed can be related to the lack of systems knowledge which is apparent here. The pilots operating handbook contains the following clear advice on the hydraulic system:



Pilot deliberately hit tree at (A) to stop aircraft before the gully at (B).

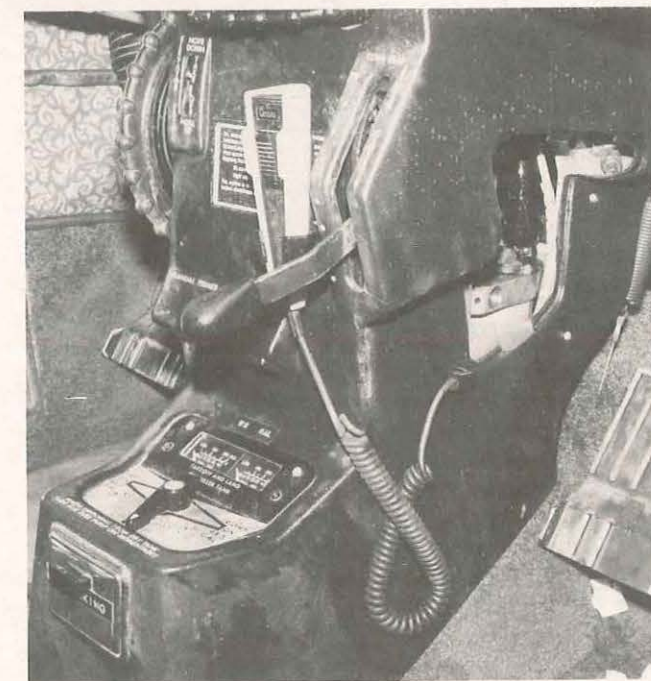
In the event the hydraulic pump continues to run (longer than one minute) after completion of a cycle as evidenced by audible sound from the gear pump motor and the red GEAR UNSAFE light staying on, it is recommended that the circuit breaker, labelled GEAR PUMP, be pulled out to prevent possible damage due to overheating.

Unfortunately the pilot was not able to connect his action — cycling the undercarriage and resetting the gear pump circuit breaker — to the reaction — an unusual noise originating from the engine/control pedestal area.

Contrary to the handbook's instructions, the pilot reset the gear pump circuit breaker, at least twice. When the circuit breaker finally remained made, the situation had been set up for the hydraulic pump to overheat.

Eventually the overheated power pack fractured its plastic venting system, allowing hydraulic oil to spray onto hot components and so causing thick smoke to billow into the cockpit. This convinced the pilot that the Cessna's engine was on fire.

Putting aside for the moment the fact that the pilot had completely misinterpreted the symptoms, his decision to land immediately because he thought the engine was on fire cannot be questioned. By the same token, had his knowledge of two major aircraft systems — the electrics and the hydraulics — been better, he perhaps would have been able to isolate the problem at an early stage and obviate the urgency to land.



Plastic overflow sump was resting against electric motor and had been severed (by heat) from the power pack.

(Continued overleaf)

An explosive combination



A 310 litre portable oxygen bottle arrived at an Engineering Base following trans-shipment by air. The bottle had been shipped in a purpose-built box which was lined with about two inches of polyurethane foam. Additionally, the bottle had been packed in polythylene 'bubble plastic'. All documentation and labelling was correct.

Apparently the bubble plastic had been used previously, for, on unpacking it was found that one section was contaminated with what appeared to be a synthetic oil, perhaps Mobil Jet 2. In turn, this oil had contaminated an area of about five inches by four inches of the box's foam lining. Oil was also found on the outside of the oxygen bottle.

Oil and 'pure' (i.e. concentrated) oxygen are a very dangerous combination, having the potential for spontaneous combustion. In this instance, a leaking cylinder could have resulted in an explosion, perhaps inflight.

Immediately following this incident, the company concerned telexed all of its personnel who handle oxygen to instruct them that clean bubble plastic must always be used for packing oxygen cylinders. A Form 225 was also submitted to the Department of Aviation so that the information could be passed on to all sections of the industry ●

Systems knowledge (continued)

The landing

A number of interesting safety lessons emerged from the landing. To be fair to the pilot, given his assessment that the aircraft's engine was on fire, getting the aircraft on the ground was the right priority. He was under considerable pressure. But — and admitting that 'buts' can be easy from behind a desk — two of the decisions he made indicated a poor understanding of the capabilities of the aircraft he was operating, to the extent that the emergency landing was made far more hazardous than it should have been. There is absolutely no value in compounding an emergency by introducing extra difficulties yourself.

First, the strip was over 400 metres long and had about 120 metres of overrun to the south, which made it adequate for a short-field landing. However, the pilot later stated that he lacked confidence in short-field landings and this affected his judgment in planning the approach. An interesting point to emerge here was that he had flown a short-field approach in his Biennial Flight Review only five weeks before, but it had been onto a long strip: in effect, it was a 'simulated' short-field approach. Whether or not this sort of training provides sufficient value may be something for flying instructors to consider.

The second point deals with the pilot's decision to deliberately run into a tree with a wing to stop his aircraft. As he was travelling at about 40 knots it was a near certainty that the fuel cell in the wing was going to rupture and spray fuel everywhere. This is precisely what happened. Thus, the perceived fire risk arising from running into the gully was exchanged for the almost certain fire risk of smashing the wing. Once the fuel cell was ruptured and a highly flammable cloud of fuel mist and spray released, the fire danger was extreme. Finally, the pilot's action of returning to the fuel-drenched cockpit and restoring electrical power so that he could use the VHF radio again created a high fire risk.

Conclusion

The systems in GA aircraft are by and large fairly straightforward. At the same time, as this accident shows, the basic operating principles of those systems must be understood by every pilot who operates them. More than that, the normal and emergency procedures *must be known thoroughly*, and pilots must be able to complete those procedures under pressure. Only by knowing his aircraft and its systems thoroughly can a pilot develop the confidence to operate that aircraft safely to its full capabilities ●

Aircraft accident reports

THIRD QUARTER 1985

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 case is it intended to imply blame or liability.

Note 1: All dates and times are local

Note 2: Injury classification abbreviations

C = Crew
F = Fatal

P = Passengers
S = Serious

O = Others
M = Minor

N = Nil

e.g. C1S, P2M means 1 crew member received serious injury and 2 passengers received minor injuries.

PRELIMINARY REPORTS (The following accidents are still under investigation)

Date Time	Aircraft type & registration Location	Kind of flying Departure point/Destination	Injuries Record Number
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05 Jul 2218	Cessna 310L VH-EDK Sydney NSW	Charter — passenger operations Deniliquin NSW/Sydney NSW	C1N,P1N 8521042
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The pilot stated that he selected gear down but did not check for a down and locked indication. After having kept sufficient power applied to land well down the runway, the pilot heard the gear warning horn immediately prior to touchdown, but could not prevent the aircraft landing with the gear retracted.

13 Jul 1630	Bell 47-G2 VH-SRE Balliang Vic	Ferry Balliang Vic 2W/Balliang Vic	C1F,P1F 8531018
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A group of pilots had travelled from a property strip to a nearby dam in order to complete training exercises on a float-equipped Bell 47 helicopter. VH-SRE was not fitted with floats but had been used to ferry some of the pilots to the area. At the conclusion of the training operation the pilot arranged to ferry VH-SRE back to the property strip. After take-off a practice autorotation was conducted over the dam and was followed by some unauthorised low flying in the vicinity. On arrival at the strip low level runs were performed along the strip with torque turns at each end. Control of the aircraft was lost during the third of these turns and the aircraft struck the ground in a steep nose-down attitude. Fire broke out on impact and engulfed the wreckage.

14 Jul 1700	Piper 28-151 VH-PZW Redcliffe Qld	Non commercial — pleasure Redcliffe Qld/Redcliffe Qld	C1N,P1M,P2N 8511031
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After completing the first landing of the intended touch and go, the pilot readjusted the elevator trim, flap and applied full power. As the speed increased to about 65 knots he attempted to select the climb attitude but found that the elevator control was jammed in the neutral position. The take-off was abandoned. However, the pilot was unable to stop the aircraft before it overran the strip and struck a levee bank. An inspection of the aircraft revealed that a small aerosol container had jammed the elevator control cables.

16 Jul 2000	Beech 58 VH-RLE Bankstown NSW	Charter — cargo operations Warren NSW/Dubbo NSW	C1N 8521043
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The pilot reported that after take-off the landing gear could not be fully retracted. On arrival at Dubbo efforts to lower the gear by normal and emergency means were unsuccessful. The pilot elected to divert to Bankstown and subsequently landed on the partially extended gear. The nosegear collapsed and the aircraft slid to a halt.

16 Jul 1200	Cessna 150L VH-DGZ Roma Qld 6E	Non commercial — business Noosa Heads Qld/Roma Qld	C1M,P1M 8511032
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Before departure the pilot dipped the fuel tanks and estimated there was sufficient fuel to complete the planned flight. Approaching the destination the engine stopped. The pilot selected a road on a newly developed housing subdivision as the only suitable landing area and an approach was made into the north-east with a tailwind of about 15 knots. After touchdown the pilot was unable to stop the aircraft before a sharp bend in the road. He brought the aircraft to a stop by steering it between two poles.

17 Jul 1920	Bell 206B VH-FJR Lancelin WA	Charter — aerial ambulance Jandakot WA/Lancelin WA	C1M, P1N 8551015
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The pilot was positioning the helicopter, before carrying out a medical evacuation from a ship. During a night approach to a pad, lit by car headlights, the helicopter collided with sand dunes.

20 Jul 1655	Ryan STM VH-CXR Wyndham WA	Air show/air racing/air trials Wyndham WA/Wyndham WA	C1F 8551016
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At the end of the display the aircraft was observed to enter a spin at a height of between 800 and 1000 feet agl. Four turns of the spin were completed, and the witnesses reported that recovery action had been taken just before the aircraft struck the ground.

02 Aug 0738	Beech V35-MK2 VH-DYS Mataranka HS NT	Non commercial — pleasure Mataranka HS NT/Tindal NT	C1F,P3F 8541013
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The aircraft was observed to take-off and climb to about 150 feet above the strip. It then entered a steady, wings level descent and collided with trees 500 metres beyond the strip. The aircraft was destroyed by impact forces and the ensuing fire.

Date Time	Aircraft type & registration Location	Kind of flying Departure point/Destination	Injuries Record Number
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03 Aug 0755	Hiller UH12-E VH-FFX Hughenden Qld	Ferry Hughenden Qld/Mt Pleasant Qld	C1N,P2N 8511034
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At about 400 feet agl on climb, the helicopter suffered a partial loss of engine power. During the subsequent landing flare the pilot misjudged the power available and the helicopter was landed heavily, collapsing the skids.

05 Aug 1220	Cessna 182Q VH-TGJ Dalbeg Qld	Non commercial — business Strathmore Stn Qld/Dalbeg Qld	C1M 8511036
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After touchdown, the pilot applied gentle braking but believed the aircraft was not decelerating. To avoid running off the end of the strip he attempted a ground loop, however, the aircraft ran off the side of the strip and struck a vehicle.

07 Aug 0546	Beech 65 A80-8800 VH-FDR Biloela Qld 37NE	Supplementary Airline Brisbane Qld/Rockhampton Qld	C1F 8511037
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This aircraft had only recently been acquired by the company and had a different fuel system from others of the same type in the fleet. The pilot had not flown this aircraft previously. After a flight time of about 110 minutes the pilot reported that both engines had stopped and he was unable to transfer fuel from the outboard tanks. When the wreckage was located no evidence of fuel was found in the inboard tanks, however, some evidence of fuel was found in the outboard tanks.

09 Aug 1545	Cessna 182N VH-EKF Burketown 26NW	Non commercial — pleasure Urapunga Qld/Burketown Qld	C1N,P1N 8511038
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Approaching the destination, the engine began to run roughly. As the aircraft was losing altitude the pilot selected a track running through the scrub as the only suitable landing area. During the landing roll both wings struck trees and the aircraft ran off the track.

13 Aug 1027	Cessna 182H VH-KMM Ord River HS WA	Non commercial — business Kununurra WA/Ord River HS WA	C1F,P2F,P1S 8551020
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The destination was served by two landing sites — an ALA near the homestead and a licenced strip 12 kilometres to the north. The pilot elected not to use either, but made an approach to a road adjacent to the homestead. The usable length of this road was 450 metres and the width was less than 3 metres. The approach was made over a shed in light downwind conditions. Touchdown occurred about 200 metres from the end of the road, and the pilot then attempted to go around. During this attempt the aircraft struck two wire fences before colliding heavily with a tree. Fire broke out and gutted the wreckage.

18 Aug 1610	Cessna U206-G VH-APH Oodnadatta SA	Non commercial — pleasure Leigh Creek SA/Oodnadatta SA	C1N,P4N 8541014
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After touchdown the aircraft began a series of bounces. The pilot initially attempted to control the aircraft with the elevators but then applied full power to go-around. However, the aircraft struck the ground in a nose-down attitude tearing off the nosewheel and bending the propeller blades.

19 Aug 0600	Gates 35A VH-WFE Tindal NT	Charter — cargo operations Alice Springs NT/Tindal NT	C2N 8541016
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The aircraft was making a landing at first light. During the landing roll a wallaby was seen bouncing towards the aircraft. The animal was struck by the left maingear leg and the force of this collision resulted in a portion of the wallaby being flung into the left flap.

20 Aug 1720	Cessna 182K VH-KRH Batchelor NT	Sport parachuting (not associated with an airshow) Batchelor NT/Batchelor NT	C1N,O1S,O3N 8541017
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As the four parachutists were preparing to jump from the aircraft, the reserve parachute, of the parachutist who was standing on the wing strut of the aircraft, deployed. The reserve parachute was ejected forward over the leading edge of the wing causing the parachutist to be dragged over the wing before falling from the aircraft. During the subsequent descent the parachutist released the main parachute which failed to fully deploy. In an effort to reduce his high rate of descent he steered towards a large tree contacting the branches before falling to the ground.

24 Aug 1700	Cessna 310L VH-KVY Harden NSW	Charter — passenger operations Tumut NSW/Dubbo NSW	C1N,P2N 8521046
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About 20 minutes after take-off and while cruising at 4500 feet amsl, the right engine suddenly lost all power. The pilot reported that he was unable to restore power, and he elected to land at a nearby ALA. From the downwind position a continuous left turn was flown to align the aircraft with the strip. On short final approach the left engine also lost power and the aircraft touched down short of the strip boundary. It ran through two fences and the nosegear collapsed after striking a dirt bank.

26 Aug 1625	Cessna 210M VH-RQD Punmu WA	Charter — passenger operations Jiggalong WA/Punmu WA	C1N,P5N 8551021
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About 150 metres after a normal touchdown the aircraft began to veer to the right. The pilot was unable to regain directional control and the aircraft ran off the strip, through a gully and collided with a tree. While the aircraft was being vacated, a fire was noticed around the right wheel area. This fire was controlled by use of the portable extinguisher. A subsequent examination of the strip revealed marks indicative of heavy, intermittent braking forces being applied to the right wheel during the landing roll.

28 Aug 1142	Cessna 180K VH-APW Parafield SA	Non commercial — practice Parafield SA/Parafield SA	C1N,P1N 8541015
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The pilot, who had just purchased the aircraft but had little experience on tailwheel types, had completed two hours of training the previous day. On the following morning he intended to further familiarise himself with the aircraft, by carrying out a number of circuits. During an attempted three-point landing the left wingtip struck the runway and directional control was lost. The aircraft veered off the runway and came to rest outside the flight strip.

Date Time	Aircraft type & registration Location	Kind of flying Departure point/Destination	Injuries Record Number
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02 Sep 1118	Cessna 182Q VH-DFR Wagga NSW	Non commercial — pleasure Longwarry Vic/Wagga NSW	C1N,P2N 8521048
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During his pre-flight inspection, the pilot detected water in the fuel samples from the various drain points. Further samples were taken until no trace of water was evident. The subsequent flight of almost 90 minutes was uneventful, until the pilot selected full flap on final approach to land. At this point the engine lost all power and during the ensuing forced landing the aircraft collided with a fence post. Investigation revealed that the fuel caps were not providing adequate sealing, and a substantial amount of water remained in the fuel system. Prior to the flight the aircraft had been parked in the open for some days and considerable amounts of rain had fallen.

04 Sep 0855	Cessna 310R VH-TWQ Pt Hedland WA	Supplementary Airline Pt Hedland WA/Pt Hedland WA	C2N 8551022
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Prior to touchdown the gear position indicator indicated that the gear was down. During the landing roll the right main gear collapsed and the right wing, engine, propeller and flap struck the ground.

06 Sep 1205	Piper 32-TR300T VH-CXX Mudgee NSW	Non commercial — pleasure Mudgee NSW/Moorabbin Vic	C1N,P5N 8521049
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Shortly after take-off a loud banging noise was heard from the inboard area of the right wing. The pilot elected to fly a low level circuit and land to investigate the noise. On short final approach heavy sink was encountered, and despite the application of power the aircraft touched down about 100 metres short of the runway. It ran through the airport boundary fence and came to rest near the flight strip with the gear collapsed. Investigation revealed that a section of the door seal had become unstuck and had trailed in the slipstream, beating against the door.

06 Sep 1245	Avnspier Robin-R2160 VH-NRKN The Oaks NSW 4NE	Non commercial — pleasure The Oaks NSW 4NE/The Oaks NSW 4NE	C1N,P1N 8521050
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The pilot was conducting a flight in the local training area. He reported that as he applied power to climb from 2000 to 3000 feet amsl the engine suddenly stopped completely. Efforts to regain power were unsuccessful and during the ensuing forced landing the right wing struck a dead tree.

07 Sep 1230	Rawlins RW Rand KR2 VH-LLL Camden NSW 10NE	Non commercial — pleasure Camden NSW/Camden NSW	C1S 8521051
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The pilot reported that while the aircraft was in cruising flight it suddenly began to vibrate heavily. The pilot closed the throttle but the violent vibration continued. The surrounding terrain was generally unsuitable for a forced landing, and in the latter stages of an approach towards a small paddock the right wing struck a tree. The aircraft then dived into the ground and was destroyed. It was subsequently determined that more than half of one of the two propeller blades had separated in flight.

08 Sep 0700	Evans VP2 VH-SJX Manton Qld	Non commercial — pleasure Manton Qld/Manton Qld	C1N 8511041
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The pilot stated that at about 70 feet agl on climb after take-off, the aircraft encountered turbulence. As he was applying left aileron to counter the turbulence, the engine suddenly stopped. The pilot checked the position of the fuel selector and turned the aircraft towards a cleared area. The aircraft was landed in a timbered area about 550 metres beyond the end of the strip. When the aircraft came to a stop the pilot noticed that the ignition switch was in the off position.

23 Sep 1702	Aero Comdr 500A VH-IOE Port Hedland WA	Aerial Agriculture Pardoo WA/Pardoo WA	C1N,P2N 8551024
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After the gear was selected down, no down indication was received for the right gear leg. The pilot decided to divert to Port Hedland where engineering advice was available. When it was decided that all the options were exhausted, the pilot landed the aircraft. As the right wheel contacted the ground the leg collapsed and the aircraft slid to a stop.

25 Sep 1205	Cessna 152 VH-FUR Archerfield Qld	Instructional — solo (supervised) Archerfield Qld/Archerfield Qld	C1N 8511043
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On the third landing of the exercise, the pilot stated that the aircraft touched down on all three wheels and bounced. The aircraft was then observed to land on the mainwheels then the nosewheel. The nosegear collapsed and the aircraft skidded for 33 metres on the lower engine cowl before coming to rest.

29 Sep 1445	Cessna 185A VH-AGI Collie WA 60E	Sport Parachute Jump Hillman Farm WA/Hillman Farm WA	C1N 8551026
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At the conclusion of a parachute dropping sortie, the pilot landed the aircraft at the strip in a strong crosswind. During the landing roll the aircraft began to swing to the left and the right gear leg collapsed. The right wing, tailplane and elevator were bent after contacting the ground.

FINAL REPORTS (The investigation of the following accidents has been completed)

Date Time	Aircraft type & registration Location	Kind of flying Departure point/Destination	Injuries Record Number
Pilot Licence	Age	Hours Total Hours on Type	Rating

17 Jul 1545	Cessna 172M VH-DXE Windorah 140NW	Non commercial — business Palparara Stn Qld/Windorah 140NW	C1N,P1N 8511033
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Commercial 19 357 104 Instrument rating class 4

After landing on a claypan, the pilot taxied the aircraft along a track to pick up a passenger. The right mainwheel entered an area of bulldust and the aircraft swung to the right off the track. As the pilot was manoeuvring the aircraft back onto the track the right wing struck a tree.

The pilot was attempting to save time by taxying towards the passenger. Forward visibility was impaired as the pilot was looking into the sun and there was glare on the windscreen. The tree struck was the only obstruction in the area.

Date Time Pilot Licence	Aircraft type & registration Location	Age	Kind of flying Departure point/Destination Hours Total	Hours on Type	Rating	Injuries Record Number
27 Jul 1320 Student	Piper 28-151VH-PMW Orange NSW	32	Instructional—solo (supervised) Orange NSW/Orange NSW 12	12	None	C1M 8521045
During the fifth touch-an-go landing of a period of solo circuits the student pilot applied right rudder in anticipation of the expected swing as take-off power was applied. The aircraft immediately swung to the right and the student, becoming confused, applied further right rudder pressure. The aircraft left the runway and impacted a ditch outside the flight strip. The pilot was not using the sash component of his seat belt and he suffered a facial laceration when he struck the instrument panel during the impact.						
29 Jul 1141 Senior commercial	Cessna 185B VH-KPA Jandakot WA	24	Aerial mapping/photography/survey Jandakot WA/Jandakot WA 1850	5	Instrument rating 1st class or class 1 with instrument rating	C1N 8551017
Towards the end of the landing roll the aircraft began to diverge to the right. The pilot unsuccessfully attempted to correct the situation and the aircraft ground looped. The left main gear leg was broken off and the left wing, tailplane and the propeller struck the ground. The pilot was inexperienced on tailwheel aircraft and the landing was conducted in light quartering tailwind conditions.						
03 Aug 0900 Private	Piper 28-180 VH-PIH Quilpie Qld 75SSW	34	Non commercial — aerial application/survey Bowalli Qld/Bowalli Qld 531	200	None	C1N 8511035
The pilot was carrying out an inspection of water points on his property. The inspection was flown at an altitude of about 500 feet agl and involved sustained turns at an angle of bank of about 40 degrees over the water points. Just after the recovery from one of these turns, the engine began to lose power. After unsuccessfully attempting to rectify the problem, the pilot decided to land on a cleared area. The aircraft landed heavily short of the area and collided with trees. At the moment of engine failure, the engine was drawing fuel from the right hand tank and the corresponding fuel gauge indicated less than a quarter full. An inspection of the aircraft did not reveal any mechanical reason for the loss of power. However, it is probable that the turns were uncoordinated and the fuel tank outlet became uncovered because of the low fuel quantity, in the right tank, resulting in a loss of power from fuel starvation.						
06 Aug 1700 Private restricted	Piper 18-150 VH-WOO Mullewa WA 20N	27	Training Mullewa WA 20N/Mullewa WA 20N 68	25	None	C1N 8551018
At the conclusion of a property inspection the pilot decided to practice a glide approach in 15 knot wind conditions, which gave a light crosswind on the selected strip. Initial touchdown was on the tailwheel and the aircraft bounced. After the next touchdown the aircraft commenced to run off the side of the strip. The pilot applied power to go-around but the propeller struck the ground and the aircraft came to rest on its nose in a paddock adjacent to the strip. When the aircraft bounced, the pilot had not maintained the control inputs required to compensate for the crosswind, and after the subsequent touchdown the aircraft had commenced to weather-cock. Having applied power to go-around, the pilot had progressively pushed forward on the control stick, in the belief that the tailwheel was still on the ground.						
11 Aug 1735 Glider	Burkhart Astir CS VH-WQJ Bundaberg 12SSW	34	Non commercial — pleasure Gliding strip/Gliding strip 261	42	Glider	C1N 8511039
The pilot intended to land the glider as close as possible to the hangar. On final, speed was increased to make good the touchdown point, then the aircraft was held in level flight at about 20 feet above the strip. As the landing gear was selected down, the nose dropped and the glider impacted the runway heavily. The landing gear failed and the glider slid for 47 metres on its lower fuselage before coming to rest. The elevator trim had been set nose down for high speed flight, and although a trim check is required, it was omitted from the pre-landing checks. The pilot claimed that when he changed hands to lower the gear, the nose trim pulled the control stick from his grasp which resulted in the nose drop and the subsequent heavy landing.						
11 Aug 1130 Student	Piper 28-140 VH-PPL Kweda WA 85	63	Non commercial — practice Brooklands WA/Brooklands WA 40	20	None	C1M 8551019
During the downwind leg of the circuit the student pilot noticed some sheep moving between paddocks. He extended the downwind leg to watch the sheep. After establishing the aircraft on final the pilot realised the approach path was lower than normal but he took no corrective action and the aircraft struck an earth bank which ran across the approach end of the strip. The pilot was undergoing training at a local flying club and had limited solo experience. He was concerned that he may lose his level of proficiency and he decided to conduct a period of solo circuit practice, in his own aircraft, at his property airstrip without first contacting his instructor. The earth bank was located close to the strip threshold which was not clearly defined.						
18 Aug 1628 Private	Piper 28-161 VH-PZH Cairns Qld	41	Non commercial — pleasure Cairns Qld/Cairns Qld 210	35	None	C1N,P1N 8511040
The pilot intended to drop a flour bomb at a local cricket ground. He subsequently advised that during the run-in to drop the bomb at 400 feet agl a downdraft was encountered. Full power was rapidly applied but the engine faltered and the aircraft collided with the top of a tree at a height of about 35 feet agl. Some 40 people were gathered under this tree at the time. The impact shattered the windscreen and the cockpit was filled with debris, and a 2 metre limb remained attached to the horizontal stabiliser. The pilot was able to retain control of the aircraft and a safe landing was carried out at the destination aerodrome. No evidence was found to support the pilot's claim that the aircraft was affected by a downdraft. It was possible that the pilot was distracted by the actions required to drop the flour bomb, and did not pay sufficient attention to the area ahead of the aircraft.						

Date Time Pilot Licence	Aircraft type & registration Location	Age	Kind of flying Departure point/Destination Hours Total	Hours on Type	Rating	Injuries Record Number
29 Aug 1253 Stud. — helicopter	Robinson R22 VH-CIU Hoxton Park NSW	41	Instructional — solo (supervised) Hoxton Park NSW/Hoxton Park NSW 23	23	None	C1N 8521047
Following an hour of dual assessment flying, the instructor authorised the student to perform his first solo flight. As soon as the helicopter was lifted into the hover, it began to move to the right. The right skid contacted the ground, the aircraft rolled to the right and came to rest on its side. Although he had been briefed on the different handling characteristics of the aircraft when only one person was on board, the student had evidently not anticipated the degree of change which would occur.						
06 Sep 1030 Senior com. — helicopter	Robinson R22 VH-PYG Jandakot WA	38	Instructional—check Jandakot WA/Jandakot WA 6550	125	Flight instructor grade 1 or 2 with instrument rating	C2N 8551023
During the test, the examiner warned the student that he was about to simulate an engine failure during taxiing, requiring a landing from a height of two feet. As the examiner closed the throttle gently, the student immediately applied full right pedal. The examiner attempted to reverse the control input with left pedal, but the helicopter struck the ground heavily on the rear of the left skid. This resulted in the bending of the engine mounting frame.						
18 Sep 1225 Com. Helicopter	Hillier UH12 VH-UHB Ipswich Qld 40SSW	35	Aerial agriculture Kalbah Qld 3NW/Kalbah Qld 3NW 8309	2098	Agricultural class 1	C1N 8511042
Prior to the commencement of the spraying operation, the pilot carried out an aerial survey of the area noting the position of all wires. On the first run, the aircraft was flown under both sets of wires. When the run in the opposite direction was commenced, the pilot intended flying the helicopter over the first set of lines and under the second set of lines. However, the helicopter collided with the second set of lines and impacted the ground 70 metres beyond the wires. The pilot stated that he had forgotten about the second set of wires and was flying the aircraft higher above the crop than normal. The previous night the pilot had had a disturbed sleep and was probably suffering some fatigue.						
20 Sep 1500 Private	Cessna 150G VH-RZD Muresk WA	59	Non commercial — pleasure Muresk WA/Muresk WA 777	450	None	C1N 8551025
Earlier in the day the pilot had flown the aircraft from his farm to Muresk. Because no fuel was available at Muresk, he decided to fly the aircraft to Northam, 13 kilometres to the north. Just after the aircraft became airborne, the engine lost power. The pilot was committed to landing in a paddock. During the landing sequence the aircraft struck a fence and ran over a depressed roadway, tearing off the nosegear. The loss of power was due to fuel exhaustion. Prior to commencing the take off, the pilot did not check the quantity in the fuel tanks, nor did he calculate the remaining fuel endurance.						
22 Sep 1210 Student	Cessna 150 VH-FMG Camden NSW	45	Instructional — solo (supervised) Camden NSW/Camden NSW 32	32	None	C1N 8521052
After flaring too high the student pilot continued with the landing attempt but the aircraft struck the runway heavily then bounced several times. The nose gear assembly was distorted and the engine support frame was bent.						
27 Sep 1750 Private	Thorpe T18 VH-ELW Cairns Qld	49	Instructional — training Cairns Qld/Cairns Qld 650	500	None	C2N 8511044
The pilot in command, who was also the owner of the aircraft, was acting as the safety pilot for the other pilot, who had only recently received training on the aircraft. This was the first occasion on which the co-pilot had flown the aircraft from the right hand seat. He flared the aircraft too high on the first circuit and was advised by the pilot in command that the flare had been commenced too early. As he attempted to reposition the aircraft closer to the runway it struck the runway heavily and bounced. The co-pilot inadvertently closed the throttle and the aircraft struck the runway in a nose down attitude. Damage was caused to the propeller, engine firewall and the gear.						

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.)

Date Time	Aircraft type & registration Location	Age	Hours Total	Pilot Licence Hours on Type	Rating	Record Number
27 Feb 83 1810	Cessna 172 VH-DOX Leigh Creek Sth	24	78	Private 19	None	8341007
The pilot flared the aircraft for landing but then decided he was undershooting and applied full power to go-around. The aircraft climbed to about 7 feet when the left wing dropped and struck the ground. The aircraft yawed sharply to the left and the nose struck the ground heavily. The pilot was late in detecting the undershoot but when full power was applied to correct this, he failed to adjust the pitch attitude and the aircraft stalled.						

Date Time	Aircraft type & registration Location	Age	Hours Total	Pilot Licence Hours on Type	Rating	Record Number
05 Jun 83 1125	Cessna 182P VH-IRL Brunette Downs NT	26	122	Private 16	None	8341016
After crossing the threshold at 75 knots power was reduced to idle and a landing flare commenced at about 25 feet agl. The aircraft floated for some distance before the nosewheel contacted the ground heavily 400 metres from the threshold. A bounce ensued followed by a further heavy touchdown on the nosewheel which then collapsed and was torn off as the aircraft slid on its nose for 98 metres.						
20 Jun 83 1715	Bell 47-G5A VH-AAW Normanton Qld 59S	29	272	Commercial — helicopter 106	Agricultural class 1	8311038
On the morning of the accident a periodic inspection had been completed on the aircraft. Following this inspection, the pilot, accompanied by an engineer, carried out a successful test flight in the helicopter. The pilot then lunched with the engineers and after farewelling them at the airport was driven to the helicopter to prepare for the flight back to the mustering camp. The helicopter was later observed by a stockman who was travelling in a vehicle towards the mustering camp. When the helicopter was first seen it was flying at a height of about 200 feet above the tops of the trees in the direction of the camp. It then seemed to apparently stop, turn abruptly through 90 degrees to the left, roll to the left and spin through 360 degrees before impacting the ground inverted. At about the same time as the helicopter turned to the left an object was seen to fly horizontally away from the aircraft to the right. After ground impact a fire broke out and engulfed the wreckage. An extensive search of the area failed to locate the object that had fallen from the helicopter. However it is believed that the object may have been one of several cans of oil or grease the pilot was known to have carried in the aircraft. The examination of wreckage did not reveal any defect in the helicopter which was likely to have contributed to the occurrence. The reason for the loss of control by the pilot could not be determined.						
28 Feb 84 1230	Cessna 182B VH-RFG Coober Pedy SA	25	294	Private 31	Instrument rating class 4	8441007
The pilot reported that the aircraft was higher than normal during the approach to land in crosswind conditions. The aircraft touched down heavily and bounced. Control was not regained and the aircraft stalled at about 10 feet above the runway. It then struck the ground in a nose down attitude, sustaining damage to the forward fuselage and the propeller. The pilot lacked recent experience on the aircraft type. A go-around was not initiated after the aircraft bounced on landing.						
09 Mar 84 0641	Cessna T188C VH-MXJ Ayr Qld 8WNW	39	12000	Commercial 5000	Agricultural class 1	8411010
Shortly after take-off for rice spraying operations the pilot noticed that engine power was decreasing. He was unable to prevent a continuing loss of power and after dumping the hopper load he attempted to guide the aircraft towards a relatively clear area. One gear wheel entered the rice crop and the aircraft swung into an adjacent cane crop and overturned. The pilot was able to kick out a window and escape from the aircraft which appeared not to have suffered extensive damage. Whilst the pilot was absent from the site an explosion was heard and the aircraft was destroyed by fire. Investigation was hampered by the effects of the fire and the reasons for the loss of engine power and subsequent fire were not established.						
24 Mar 84 0930	Cessna 150G VH-KUB Deniliquin 32N	33	350	Private restricted 220	None	8421013
At about 300 feet after take-off the pilot noticed a restriction in forward movement of the control yoke. He carried out a landing in a paddock to his left but the aircraft struck a levee bank and overturned. The cause of the control yoke restriction reported by the pilot could not be determined.						
21 Apr 84 1340	Cessna 210 VH-RHK Pt Macquarie NSW	27	230	Private 30	None	8421019
When the landing gear was selected down it failed to extend. The pilot attempted unsuccessfully to extend the gear using the emergency system and by the application of 'g' forces. Touchdown was made with the main gear up and the nose gear partially extended. The filter in the landing gear hydraulic system was found to have a cracked housing and all the oil in the system had been lost. The reason for the crack in the housing was not established.						
22 Apr 84 1050	Bell 206-B VH-UTS Nunawading Vic	37	6700	Commercial — helicopter 2000	Instrument rating 1st class or class 1 with instrument rating	8431014
During the take-off, the engine instruments were checked while the helicopter was in a hover and no abnormalities were noted. Just as forward movement was commenced a loud noise was heard and all engine power was lost. A significant drop in rotor rpm occurred and the main rotor struck the tail boom during the subsequent forced landing. Inspection revealed a total mechanical failure of the engine compressor. The majority of compressor blades were found to be broken and the resulting degree of damage precluded identification of the location of the initial failure. However, the examination of sections of blades revealed corrosion pitting consistent with inadequate compressor washing servicing. The aircraft had been operating in a corrosive atmospheric environment and it is probable that the initial failure within the compressor resulted from corrosion induced fatigue.						
11 May 84 1200	Hiller UH12-E VH-FFX Pretty Plains HS	34	3560	Commercial — helicopter 3540	None	8411021
While returning to refuel at a mustering yard, the pilot attempted to move a bull from some trees. When this proved unsuccessful the pilot climbed to continue the flight to the yard. The engine began to run roughly and an approach to a clearing was made. Rotor rpm decayed as some trees were cleared and the pilot was unable to prevent a heavy landing. The helicopter bounced about two metres, the right skid collapsed and the main rotor struck the ground. Investigation revealed that the engine failed due to fuel exhaustion. The pilot's technique was to work on a set endurance from full tanks and not rely on the fuel gauge. At the previous refuelling he filled the tank to the filler neck, but the helicopter was parked on a slope which prevented approximately 20 per cent of the tank's volume from being used, and reduced the endurance.						

Date Time	Aircraft type & registration Location	Age	Hours Total	Pilot Licence Hours on Type	Rating	Record number
12 Jul 84 1545	Transav PL12 VH-BPR Tumbarumba 24W	39	13466	Commercial 10000	Agricultural class 1	8421034
Superphosphate spreading operations had been carried out throughout the day. During the subject take-off attempt the aircraft began to pull to the left shortly after full power was applied. The pilot abandoned the take-off and as he did so the left main gear collapsed. The aircraft groundlooped and came to rest 70 metres from the start of the take-off roll. Investigation revealed that the left main gear pivoting lugs had fractured. The failure of the gear pivoting lug was probably caused by operations on rough and unprepared strip surfaces. There was no evidence of fatigue and the failure was considered to be an isolated occurrence.						
01 Aug 84 1100	Robinson R22 VH-UXD Brooklyn Stn Qld	45	2890	Private — helicopter 890	None	8411033
The pilot landed the helicopter to allow his passenger to alight. The engine was left running, the cyclic frictioned and collective held fully down. The pilot then felt a low frequency vibration begin and almost immediately the left side of the helicopter lifted and the tail swung to the right. Control inputs by the pilot had no effect and the helicopter rolled onto its side. One of the four belts providing drive to the transmission had jumped off the sheave, for reasons which could not be established. The belt had become wrapped around the clutch shaft and had caused a sudden braking action to the main rotor blades. This braking force was of such a magnitude that the fuselage yawed in an inertia reaction. The right skid dug into the soft ground and a dynamic roll-over resulted.						
07 Aug 84 1548	Cessna 210L VH-EJC Bankstown NSW	46	1600	Private 100	Instrument rating class 4	8421037
On arrival in the destination circuit area the pilot was unable to obtain a safe "down and locked" indication for the landing gear. A diversion to a more suitable aerodrome was carried out and after all efforts to lock the left main gear down were unsuccessful, a safe landing was made with all wheels retracted. Damage was confined to the propeller blades and the under skin of the fuselage. The right main gear would not lock down because the lock mechanism was corroded and dirty. The corrosion and foreign matter prevented the down lock hook from positioning correctly.						
20 Aug 84 1645	Airtract AT301 VH-IXL Ingham Qld 1S	30	6400	Commercial 60	Agricultural class 1	8411037
As the pilot was manoeuvring the aircraft to commence another baiting run, the engine lost all power. The aircraft was landed in a paddock of young sugar-cane. After a ground roll of 90 metres the main wheels dug into the furrows across the paddock and the aircraft nosed over. A fire broke out and engulfed the wreckage. An inspection of the carburettor found that the float valve was loose in the carburettor body. This would have resulted in the carburettor flooding, which in turn probably caused the engine to fail. Because of the altitude at which the aircraft was operating insufficient time was available for the pilot to manoeuvre the aircraft for a landing on more suitable terrain.						
26 Aug 84 1333	Schneider ESKA6 VH-GQK Cunderdin WA	25	65	Glider 34	Glider	8451021
While being towed to the planned launch height, the glider under tow and another glider in the circuit area collided. The collision caused the tow rope to break and the pilot of the glider, although injured, was able to land his aircraft. The tailplane of the other glider separated in the collision and the aircraft descended uncontrolled into the ground. The tug aircraft was undamaged and landed safely. The glider rejoining the circuit approached the tug and glider under tow from the right rear quarter. Immediately prior to the collision, witnesses reported that the glider attempted avoiding action. The reason the pilot did not see the two other aircraft until it was too late to successfully take avoiding action could not be determined. However, the combination of a broken cloud cover and a mottled background would have made the pilot's task more difficult.						
26 Aug 84 1333	De Hav C1 A1 VH-RJK Cunderin WA	38	1486	Commercial 80	Instrument rating class 4	8451021
While being towed to the planned launch height, the glider under tow and another glider in the circuit area collided. The collision caused the tow rope to break and the pilot of the glider, although injured, was able to land his aircraft. The tailplane of the other glider separated in the collision and the aircraft descended uncontrolled into the ground. The tug aircraft was undamaged and landed safely. The glider rejoining the circuit approached the tug and glider under tow from the right rear quarter. Immediately prior to the collision, witnesses reported that the glider attempted avoiding action. The reason the pilot did not see the two other aircraft until it was too late to successfully take avoiding action could not be determined. However, the combination of a broken cloud cover and a mottled background would have made the pilot's task more difficult.						
26 Aug 84 1333	Czech Blanik VH-WUT Cunderin WA	48	101	Glider	Glider	8451021
While being towed to the planned launch height, the glider under tow and another glider in the circuit area collided. The collision caused the tow rope to break and the pilot of the glider, although injured, was able to land his aircraft. The tailplane of the other glider separated in the collision and the aircraft descended uncontrolled into the ground. The tug aircraft was undamaged and landed safely. The glider rejoining the circuit approached the tug and glider under tow from the right rear quarter. Immediately prior to the collision, witnesses reported that the glider attempted avoiding action. The reason the pilot did not see the two other aircraft until it was too late to successfully take avoiding action could not be determined. However, the combination of a broken cloud cover and a mottled background would have made the pilot's task more difficult.						
05 Sep 84 1300	Cessna 210N VH-FOK Go Go Station WA	43	6570	Private 130	None	8451022
The pilot selected a 340 metre long taxiway as the take-off path. After a ground roll of about 250 metres, at an indicated airspeed of approximately 55 knots, the pilot rotated the aircraft but did not become airborne. He then closed the throttle and the aircraft ran off the end of the taxiway and collided with several trees. The pilot was unfamiliar with the airfield but had been advised that the strip was 915 metres long. He was unaware that the take-off path he had selected was along the taxiway which led to the strip. Prior to the attempted take-off, he had been involved in an argument with his employer and was probably also fatigued after a week of extensive business travel.						

Date Time	Aircraft type & registration Location	Age	Hours Total	Pilot Licence Hours on Type	Rating	Record number
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20 Sep 84 1743	Cessna 210M VH-MGI Tocumwal NSW	28	3505	Senior commercial 380	Flight instructor grade 1 or 2 with instrument rating	8421050
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On downwind after the first take-off following a scheduled servicing the pilots were unable to fully extend the landing gear. After all efforts to lower the gear by normal and emergency methods were unsuccessful, the pilot in command carried out a safe landing with the gear retracted.

Part of the work carried out during the servicing included the replacement of 'O'-ring seals in the main gear up-lock valve. During re-assembly of this valve, a ball bearing, whose function was to direct fluid to the actuator, was omitted. When the system was activated, insufficient pressure could be generated to fully extend and lock the gear.

27 Sep 83 1400	Hughes 269C Black Gin Yard Qld 5S	32	3600	Commercial — helicopter 2100	Instrument rating class 4	8311064
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As the helicopter was brought to a 20 foot hover, it began to swing to the right. The pilot applied left pedal but the rate of turn continued to increase rapidly until the helicopter impacted the ground. The right skid broke off and the aircraft came to rest on its right hand side. Examination of the tail rotor pitch control system revealed that the bolt which connects the tail rotor pitch control arm to the control rod, below the tail rotor gearbox, was missing. The bolt was never found and the reason for its absence could not be determined. It was evident that the loss of the bolt resulted in the loss of tail rotor control.

23 Oct 84 1834	Piper 34 200T VH-SVM Moorabbin Vic	45	8100	Senior commercial 50	Flight instructor grade 1 or 2 with instrument rating	8431032
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Touchdown on a simulated asymmetric landing was reported as firm and with a slight bounce. During the ground roll the right wing settled to the runway and the aircraft came to a halt off the side of the runway. The right hand main landing gear leg was found to have fractured below its pivot point.

Failure of the undercarriage leg resulted from fatigue cracking which originated at an area of corrosion within the gear leg trunnion housing.

25 Nov 84 1250	Britnor 2-A21 VH-ISI Wilton NSW 1N	21	444	Commercial 225	Instrument rating class 4	8421067
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At a height of about 200 feet after take-off the right engine lost power. The pilot feathered the propeller and commenced a gentle left turn in order to return to the strip. He later advised that the aircraft began to sink towards some large trees and he was forced to increase the angle of bank in an effort to avoid them. Shortly afterwards the aircraft struck the ground heavily in an adjacent paddock about 1 kilometre from the strip.

The engine failure was caused by jamming of accessory drive gearing as a result of the effects of excessive wear within a magneto. It was probable that a mandatory inspection of the magneto which fell due 84 flying hours before the accident was not conducted. On take-off the aircraft weight exceeded the authorised limit, however following the engine failure the pilot was able to maintain straight and level flight. A cleared area of ground lay ahead and just to the left of the flight path but the pilot had considered the aircraft had sufficient performance capability to permit a return to the strip.

01 Dec 84 1130	Victa 100 VH-BNV Chillingham 20N	58	22000	Commercial 9000	Flight instructor grade 1 or 2	8421070
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The pilot had recently purchased the aircraft and intended taking it to his local aerodrome. About 20 minutes after departure the engine suddenly lost all power and the pilot was committed to a landing on unsuitable terrain. On landing the nose and left main wheels were torn off and the left wing main spar was broken. When inspecting the aircraft after it had come to rest, the pilot discovered a loose connection in the fuel line on the inlet side of the fuel filter bowl.

The aircraft had stood disused at the departure ALA for about two years and the pilot conducted a detailed pre-flight inspection and a test flight before departure. The maintenance release was not readily available prior to departure, but its inspection subsequent to the accident indicated that no maintenance inspections had been conducted on the aircraft during the previous 27 months.

02 Dec 84 0256	Ayers S2R VH-JBN Mungindi NSW	53	17817	Commercial 25	Agricultural class 1	8421071
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At the conclusion of night spraying operations the pilot departed for Mungindi. Witnesses at the town saw the aircraft overflying at a low height and heading towards the aerodrome, which is about 7 kilometres from the town. Engine noise was then heard to cease and sounds of impact followed. The aircraft had struck the ground 5 kilometres from the aerodrome, and a post-impact fire had engulfed the wreckage.

No fault could be found with the aircraft or its systems that could have contributed to the accident. Specialist medical opinion, indicated that the pilot had suffered a heart attack before the fire occurred. It was not possible to determine to what extent, if any, the pilot was able to control the aircraft prior to impact.

16 Dec 84 1445	Glasflugel Kestrel VH-GSY Pipers Field NSW	59	58	Glider	None	8421072
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The pilot was approaching to land at the conclusion of his second flight on the type. The approach was normal, however the glider floated the length of the strip at a height of about 25 feet. At the end of the strip a turn was commenced but after completing about 90 degrees an incipient spin developed and the glider struck the ground. The pilot subsequently advised that he had activated the cruise flap lever instead of the air brake. The two levers are located side by side in the cockpit.

It is likely that the pilot was suffering a degree of heat stress. He had been in the cockpit, exposed to the sun for two and a half hours and he had not eaten since breakfast. He reported that during the final stages of flight his reactions were affected by fatigue and the heat.

24 Jan 85 0947	Socata 880B VH-UQG Wellington NSW	56	997	Private 792	None	8521005
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The pilot had diverted to Wellington because of thick bushfire smoke on his intended track. Take-off was initiated after the smoke had cleared, however shortly after becoming airborne the aircraft sank towards the ground. The pilot subsequently advised that although the engine was developing full power he was unable to prevent the sink from continuing until the aircraft struck the ground heavily, 210 metres beyond the boundary fence of the strip.

The 05 strip was used for take-off into a north-easterly breeze. However a witness about 2 kilometres away, along the take-off path, reported that the wind there was from the south. It is likely that at about 200 feet agl the aircraft experienced a head to tail wind change. The pilot attempted to regain airspeed by lowering the nose but the low altitude and rising ground ahead prevented sufficient airspeed to be recovered.

Date Time	Aircraft type & registration Location	Age	Hours Total	Pilot Licence Hours on Type	Rating	Record number
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03 Mar 85 0830	Cessna 172N VH-TSQ Falmouth Tas	18	50	Private restricted 50	None	8531009
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The pilot intended to conduct practice circuits and landings in preparation for competitions later in the day. On the first landing the aircraft bounced slightly and then veered into soft earth at the edge of the partially constructed strip. The nose gear leg collapsed and the left wing tip struck rocks adjacent to the strip.

The pilot was inexperienced and the landing was conducted in crosswind conditions onto a 15 metre wide section of strip which was closely surrounded by areas of soft ground, rocks and earthworks. The organisers of the flying competition had permitted operations to take place on a sub-standard strip.

04 Mar 85 1327	Robinson R22 VH-UXT Camden NSW	41	4950	Commercial — helicopter 28	None	8521015
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As the final sequence of a licence test flight the examiner requested the pilot to carry out a normal autorotative landing from circuit height. The aircraft was flared slightly high, recovered but subsequently contacted the ground in a tail low attitude. It then bounced forward and the tail boom was severed by the main rotor.

The aircraft flight manual specifies that touchdown following an autorotative descent must be made with the landing skids level. On this occasion touchdown was made on the heels of the skids, and the resulting oscillations of the aircraft allowed the main rotor blades to sail and strike the tail boom.

05 Mar 85 1900	Cessna 172A VH-DZA Nullagine WA	42	225	Private 150	None	8551005
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The pilot planned to arrive at his destination 10 minutes before his estimate of last light. However, deviating around rain showers and conducting an aerial inspection of a prospecting site, the pilot's arrival was delayed until 10 minutes after last light. An approach was made to the unlit strip using the aircraft landing light for guidance. After flaring at about 15 feet agl the pilot waited for touchdown but the aircraft stalled and struck the ground nosewheel first, collapsing the nose gear.

Facilities were available at the departure aerodrome which would have allowed the pilot to obtain a weather forecast and an accurate time of last light. Despite the fact that the pilot had no night flying experience he choose to land the aircraft without requesting an emergency flare path to be laid.

05 Mar 85 1500	Cessna 172G VH-PLX Windorah 85SSW	25	307	Commercial Instrument rating class 4		8511010
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The pilot who was inexperienced in mustering operations was impressed with the efficiency of the other members of the mustering team. So as not to be seen to be wasting time, the pilot elected to land downwind on the shorter strip instead of clearing cattle from the main strip. However, he did not notice a washout crossing the shorter strip. During the landing roll the aircraft entered the washout and the nosegear leg was broken off, the propeller, engine cowling and right wing were also damaged.

15 Mar 85 1000	Cessna 172M VH-RXN Pt Macquarie 75W	53	1200	Private 50	None	8521018
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Prior to departure the pilot checked the fuel quantity using a graduated dipstick, marked in litres and gallons. He noted that there was apparently sufficient fuel for the proposed flight. About 75 minutes after take-off and while cruising at 4500 feet amsl the engine lost all power. The pilot was committed to a forced landing in a rugged, heavily timbered area. The landing gear was sheared off on touchdown and deceleration forces were severe. Subsequent investigation revealed that the engine failed from fuel exhaustion.

The pilot had not flown this particular aircraft before and was unfamiliar with the dipstick graduations. He misinterpreted the quantity indicated on the dipstick litres scale as gallons and whilst dipping the tanks his eye level was such that he could not see the fuel level within the tanks. During the flight the pilot had placed little reliance on fuel gauge indications.

23 Mar 85 1221	Bell 206-B VH-KXV Karratha WA	39	6400	Commercial — helicopter 360	Instrument rating class 4	8551006
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The pilot deposited the sling load of delicate instruments on the ground. To avoid dropping the shackle on the load, and because of the proximity of a hangar to the left, he moved the helicopter to the right. The movement, together with type of shackle used and the design of the hook, resulted in the load not being released.

Prior to the flight the pilot had not insisted on the fitment of external load observation mirrors. While leaning out of the helicopter to check that the load had been released, he inadvertently caused the helicopter to move further to the right. The resulting tension on the cable connecting the hook and the load induced dynamic rollover. The pilot attempted unsuccessfully to correct the roll and during the subsequent landing the main rotor struck the ground. Use was not made of an available and qualified marshaller.

27 Mar 85 1430	Bell 47-G5 VH-DUS Boomarra Stn Qld	48	15000	Commercial — helicopter 11000	None	8511015
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While hovering over scrub at about 30 feet agl, the engine lost power. The pilot was able to manoeuvre the aircraft to overhead a clearing but rotor rpm decayed and the aircraft landed heavily bending the landing gear rear cross tube and a section of the tail boom. The power loss resulted from the incorrect fitment of rocker arms during a previous servicing.

31 Mar 85 1344	Cessna 182E VH-DBT Kyneton Vic	38	800	Private 600	Instrument rating class 4	8531016
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Four experienced parachutists intended to carry out a group descent from 5000 feet agl. To facilitate the procedure, all four were to exit the cabin and hold onto the aircraft structure before releasing at the appropriate moment. As the second parachutist moved to take up his position, facing rearwards and sitting in the Vee of the wing strut, his parachute pack evidently snagged on the door opening, and the parachute deployed. The lines passed around the lift strut and under the gear leg. The parachutist was pulled off his seat but managed to throw his arms back and around the strut. The pilot felt the aircraft slow dramatically as the parachute opened, and he applied full forward movement of the control column. One of the other parachutists activated the cut away on the deployed parachute and assisted the parachutist to return to the cabin. The aircraft lost 3200 feet of altitude during the occurrence.

During the descent to land it was noticed that the wing strut was flexing. After landing it was found that the strut was partly fractured. Had it failed in flight the wing would have been free to pivot upwards, with consequent loss of aircraft control.

Date Time	Aircraft type & registration Location	Age	Hours Total	Pilot Licence Hours on Type	Rating	Record number
07 Apr 85 1240	Robinson R22 VH-FHK Pnt Lookout Qld	26	756	Commercial — helicopter 566	None	8511016
Because of obstructions around the intended landing area, the pilot carried out a downwind approach. As the pilot reduced the speed of the helicopter for landing it was caught by a sudden gust of wind. The helicopter sank, struck the ground and bounced before landing on the left skid which entered a depression in the ground, resulting in the helicopter rolling over.						
12 Apr 85 1725	Piper 25-235 VH-TPE Mareeba Qld 7SE	32	5180	Commercial Agricultural class 1		8511017 150
During the pull up at the end of a downwind spray run, the right wing struck a tree. The aircraft was landed without further damage at a nearby aerodrome.						
On inspection of the area to be sprayed, the pilot selected a pull-up point. He stated that when that point was reached on the spray run, he closed the spray handle before initiating the pull-up and thus delayed the pull-up. After landing the pilot also found that the wind strength was greater than he had originally estimated.						
14 Apr 85 1008	Cessna 404 VH-LAD Moomba SA 55NW	30	5300	Senior commercial 400	Instrument rating class 4	8541008
During the landing roll the aircraft suddenly veered to the left. The pilot took corrective action but the nose gear collapsed and the nose section of the aircraft struck the strip surface.						
Although the strip was in regular use it was not being inspected. It was constructed on a dry lake-bed and the combination of no rain and regular use caused a soft patch to develop about 430 metres from the threshold. When the aircraft entered this area the nosewheel progressively turned left until it reached the stop. The sideload now imposed was too great and caused the noseleg bearing to fail.						
18 Apr 85 1100	Cessna R182 VH-SMV Maitland NSW	26	2700	Senior commercial 100	Instrument rating 1st class or class 1	8521030
The pilot decided to carry out a circuit in order to check the performance of the engine. Because of the presence of a gusting 20 knot westerly wind, a higher than normal approach speed was flown. The pilot stated that he closed the throttle at about 50 feet agl and flared the aircraft. The subsequent landing was heavy, the aircraft bounced, the pilot moved the control column forward and the aircraft bounced a second time. On the third touch down the pilot reported that the tail struck the runway causing substantial damage to the tail area of the aircraft.						
20 Apr 85 1343	Piper 32-300 VH-MAR Darwin NT	19	258	Commercial 100	Instrument rating class 4	8541009
After landing the aircraft was taxied along a taxiway to the general aviation parking area. In preparation for a 90 degree turn in the taxiway the pilot moved the aircraft to the right of the taxiway. The nose wheel struck a steel gable marker, which was positioned 500 millimetres off to the right of the taxiway. As a result of the collision the nose gear collapsed.						
The pilot was not concentrating sufficiently on the taxiing of the aircraft, which was being operated at a high speed.						
01 May 85 1720	Beech 95-A55 VH-FDP Busselton WA	52	2700	Private 1100	None	8551010
During the circuit, the pilot and passenger were discussing fires near their property. The aircraft was subsequently landed with the gear up.						
The gear and its warning systems were serviceable. The pilot's attention was diverted from the operation of the aircraft by the fires and the pre-landing checks were not correctly completed.						
02 May 85 1430	Hughes 269-C VH-RIK Balbirini Stn NT	20	876	Commercial — helicopter 649	Instrument rating class 4	8541010
The pilot was attempting to move a cow back into the mob. He brought the helicopter to a low hover close to the animal. The animal spun around, reared up and caught its horns on the helicopter skids. The helicopter pitched forward and struck the ground.						
The pilot was inexperienced in mustering operations and was not provided with adequate continuation training or supervision by the operator.						
03 May 85 1640	Piper 30 VH-TOD Hay NSW 24ENE	28	5500	Senior commercial 350	Instrument rating 1st class or class 1	8521026
The pilot elected to conduct the flight at a very low height above the ground. The aircraft collided with power lines, which severed the top 10 centimetres of the rudder. Control of the aircraft was maintained and a safe landing was made at the intended destination.						
04 May 85 1745	Cessna U206 VH-PQT Kempsey NSW	30	361	Commercial 26	Instrument rating class 4	8531015
The aircraft initially touched down about halfway along the strip, became airborne again, then touched down 50 metres before the end of the strip. The pilot applied power to go-around. However after reassessing the situation, he closed the throttle and attempted to steer the aircraft through a gate. The nose wheel dug into the ground and the aircraft tilted forward onto the propeller and left wing. The propeller spinner struck the gate and the aircraft stopped.						
The approach had been conducted in conditions of reduced visibility as a result of cloud cover and impending last light. The pilot had misjudged the approach and had used a higher than normal airspeed. The lack of visual cues evidently caused the pilot to delay initiating a go-around while such a manoeuvre could still have been safely accomplished.						
06 May 85 1830	Piper 34-200T VH-ADQ Kempsey NSW	41	249	Private 151	Instrument rating class 4	8521027
The pilot reported that the aircraft was flared normally for the night landing, but it dropped suddenly and struck the runway heavily. Damage was caused to the nose gear strut. The pilot, believing he was losing control of the aircraft, carried out a go-around. During the subsequent landing, the pilot was unable to steer the aircraft which veered to the left and struck a cone marker before being brought to a stop.						
The aircraft had been observed to fly a close base leg followed by a steep final approach path. The pilot had misjudged the landing flare and during the subsequent heavy landing the nose gear strut was pushed upward through the aircraft nose, dislodging the windscreen and disconnecting the nose wheel steering. Unknown to the pilot, the propellers also contacted the runway and the tips of all blades had been bent.						

Date Time	Aircraft type & registration Location	Age	Hours Total	Pilot Licence Hours on Type	Rating	Record number
09 May 85 1605	Beech D55 VH-KNE Dalwallinu WA	56	5216	Commercial 3560	Instrument rating class 4	8551011
The aircraft was landed at the destination strip with the gear up.						
No fault was found with the aircraft or its systems that could have contributed to the accident. The pilot reported that he carried out the downwind and pre-landing checks, both of which included a gear check, but he could not explain why he did not lower the gear.						
15 May 85 1335	Piper 32-R300 VH-PNB Babinda Qld 5W	55	2000	Private 1200	Instrument rating class 4	8511019
The pilot received a weather briefing before departing Townsville which indicated that the weather enroute was unsuitable for visual flight. After being issued with a clearance to enter Cairns control zone no further transmissions were received from the aircraft and it failed to arrive at Cairns. The wreckage of the aircraft was located in rain forest on the lower southern slopes of the south peak of the Bellenden Ker Range. The weather in the area at the time was reported as low cloud with heavy rain. The pilot was not qualified for flight in other than visual meteorological conditions.						
Investigation revealed that the aircraft was serviceable prior to impact. Witnesses reported that they observed the aircraft passing in and out of the cloud base, which was at about 800 feet. They saw the aircraft tracking in a northwesterly direction towards high ground which rose to 4000 feet amsl. The wreckage was discovered at an elevation of 680 feet amsl. The pilot was known to have urgent business commitments and this may have influenced his decision to continue the flight in unsuitable weather conditions.						
18 May 85 1305	Beech D55 VH-ILM Brampton Island	42	13000	Commercial 1200	Instrument rating 1st class or class 1 with instrument rating	8511020
After the pilot selected the gear down, he observed that the single gear position indicator light indicated that the gear was down. During the landing roll, as the aircraft slowed down, the left wingtip and left propeller contacted the strip. Subsequent inspection of the aircraft revealed that the left main gear was in the up position.						
The left gear uplock bracket-block had recently been repaired but the forward hole had been drilled slightly off centre. This caused the bracket to tilt rearward and the block to slip off the uplock roller face and jam against the roller retaining bolt. When the gear was selected down the gear motor drove against the jammed uplock and bent the left retract rod. This allowed the motor to complete its extension cycle and indicate a gear down condition because the indicator switches are located on the activator housing and not at each gear leg.						
18 May 85 1505	Cessna 172F VH-DNV Nth Curl Curl Bch	23	126	Private 40	None	8521031
The aircraft was cruising at 500 feet above some Sydney area beaches. Following an ATC instruction, the pilot applied full power in order to climb to 2000 feet. The engine ran roughly for a short period then lost all power and the pilot was committed to a forced landing in shallow water. Touchdown occurred about 5 metres from the shore-line and the aircraft came to rest inverted in the water.						
No pre-existing fault could be found with the aircraft engine or ancillaries. Atmospheric conditions were conducive to the formation of moderate carburettor icing. Carburettor heat had not been applied when the engine began to run roughly and lose power.						
22 May 85 2015	Piper 28-161 VH-IJK Goulburn NSW	57	578	Private 381	Instrument rating class 4	8521033
The pilot was conducting a night cross-country exercise to maintain his recent experience requirements. On final approach he realised that the aircraft was undershooting. Some engine power was applied and the approach was continued but the pilot then saw power lines ahead, too late to take any avoiding action. The aircraft struck the wires and subsequently impacted the ground 211 metres short of the threshold. It came to rest 91 metres further on after colliding with a fence. The wires struck provided power for the airfield lighting, which was extinguished at the time of collision.						
The power lines struck were 28 feet agl and were 600 metres from the threshold. The pilot had been slow to realise that the undershoot situation was developing and had not taken appropriate action to either regain the normal approach path or to go-around.						
27 May 85 1030	Bell 47-G5 VH-AEO Strathmore Stn	30	5100	Commercial — helicopter 4500	None	8511020
While flying at a slow forward speed approximately 15 feet above the trees, the helicopter suddenly yawed to the right. As the pilot was unable to correct the yaw he attempted to manoeuvre the helicopter to a clear area. The helicopter impacted the ground in a level attitude, heading rearward and rotating.						
Investigation revealed that all the teeth were missing from the forward short shaft rear coupling, which had failed due to lack of lubrication, and resulted in a loss of tail rotor propulsion. The coupling, which was covered by a rubber dust boot, had not received adequate daily inspections to ensure that it contained sufficient grease and was free of excessive play.						
30 May 85 1030	Cessna 182H VH-PLF Roma Qld	49	115	Private restricted 75	None	8511022
The pilot reported that he had made a good approach, but had flared high. The aircraft landed heavily on the mainwheels then nosewheel. Buckling of the firewall and undersurface of the fuselage was discovered after the aircraft had been shut down in the parking area.						
During his training, prior to the accident, the pilot had displayed inconsistent flying standards in the landing phase. At times he had misjudged altitude, airspeed and flare. The airspeed indicator was also found to be overreading by five knots at threshold speeds and this reduced margin above the aircraft stall speed is likely to have increased the pilot's handling difficulties.						
09 Jun 85 1300	Grumman 164 VH-CCT Gayndah Qld 30NW	43	8000	Commercial 6500	Agricultural class 1	8511024
On the pull-up at the end of the first spray run in that particular direction, the aircraft struck a single wire power line. The pilot immediately landed the aircraft in a clear area. During the landing roll the right wheel struck a large rock, which was concealed in long grass, and the right maingear was torn off. The aircraft pitched forward onto the engine and came to rest in a near vertical attitude.						
Before he commenced treatment of the area, the pilot surveyed it from the air and questioned the owner on the whereabouts of any obstructions. However, he did not check the area from the ground. Although he had been told of the presence of the wire, it was further from the paddock and higher above the ground than he had expected. The span between poles on the section of wire struck by the aircraft was 540 metres.						

Date Time	Aircraft type & registration Location	Age	Hours Total	Pilot Licence Hours on Type	Rating	Record number
09 Jun 85 1230	Glasflugel Mosquito VH-GSZ Horsham Vic 36SSE	30	508	Glider 250	Glider	8531017
During ridge soaring operations, areas of sink were encountered and the aircraft descended over forested terrain. The only area suitable for an outlanding was a small deer enclosure. The pilot initially overshot the area and during the turn to reposition the aircraft for landing the right wing struck the fence surrounding the enclosure. The aircraft yawed through 90 degrees before impacting the ground in a level attitude.						
Although general soaring conditions were poor, the pilot had elected to leave the ridge-line to conduct a sight-seeing flight. During this flight a wind change moved through the area. On return to the ridge-line the pilot, who had not detected the wind change, persisted with efforts to find an area of lift. The proximity of the aircraft to the tops of the trees and the small size of the deer enclosure precluded the pilot sighting the clearing in time to conduct a straight-in approach.						
19 Jun 85 1053	Piper 32-300 VH-WSZ American Rvr Sth	38	835	Private 282	Instrument rating class 4	8541011
The pilot established the aircraft on final approach at 80 knots with full flap selected. She allowed the airspeed to reduce to 70 knots as the aircraft crossed the boundary fence. The aircraft impacted the ground heavily, nosewheel first, from about 15 feet agl. The main landing-gear was dislodged and the nose-gear folded backwards.						
As there were sheep on the upwind end of the strip, the pilot decided to use the short landing technique but the flare height was misjudged. When sink was encountered, full up-elevator was applied but engine power was not increased as part of the recovery action. It was likely that the aircraft encountered undershoot windshear conditions on short final.						
21 Jun 85 1630	Piper 38-112 VH-MHO Parafield SA	28	27	Student 27	None	8541012
The pilot was returning from a period in the local training area. Another aircraft was also returning and was advised that it would be number 2 in the landing sequence. However, the pilot of this aircraft overtook VH-MHO on the downwind leg. On final approach it was considered that insufficient separation would exist for landing, and the pilot of VH-MHO was offered the use of the parallel runway. Because the threshold of this runway was 250 metres closer than the planned runway, the pilot carried out a steeper than normal approach. The aircraft landed heavily nosewheel first and bounced. The pilot recovered the situation and re-landed smoothly, but the firewall and nosegear assembly had been damaged.						
The pilot had probably been confused when the aircraft which was supposed to be following appeared ahead in the landing sequence, and he was offered a late change of runway. The steep approach had led to a misjudgment of the flare. The instructor in the other craft, after acknowledging an instruction to position as number 2, and advising that he had the preceding aircraft in sight, did not maintain the required sequence.						
27 Jun 85 0930	Cessna 172N VH-WHK Cape Keer Weer	44	448	Private 348	None	8511029
The pilot stated that just after the aircraft became airborne it encountered a strong gust of wind. The left wing tip and nosewheel struck the ground and the aircraft overturned.						
During the take-off run the pilot held back pressure on the control column and at 50 knots selected 10 degrees of flap, the aircraft becoming airborne after a ground roll of only 170 metres. The take-off distance required was 650 metres, however, the take-off was attempted on an unprepared salt pan with an available take-off distance of 300 metres. The pilot had operated from this area previously but on this occasion the aircraft was at a higher all up weight. The wind gust reported by the pilot was probably associated with a willy willy, encountered when the aircraft was at a low airspeed.						
27 Jun 85 0630	De Hav C2 VH-AAY Walcha NSW 3NW	27	1200	Commercial 300	Agricultural class 2	8521040
The aircraft had been parked in the open overnight. When the pilot arrived at the strip, he noted that shallow fog had settled over the area. The temperature was below freezing point and frost covered the aircraft, except for the windscreen which had been protected by a cloth sheet. A pre-flight inspection was carried out, but did not include the removal of the frost from the aircraft. Because the fog had reduced visibility to about 50 metres, the pilot taxied the aircraft along the strip to check for obstructions. During this time the moisture froze on the windscreen, however by reaching from the cockpit the pilot was able to clear the left side of the screen.						
Shortly afterwards the take-off was commenced and the lightly loaded aircraft became airborne after a ground run of about 250 metres. At this point all forward visibility was lost because of frost re-forming on the windscreen. The pilot noticed that the aircraft appeared to be banking to the left and he elected to land immediately. The left wingtip contacted the ground, followed by the main wheels. The aircraft ran off the side of the strip and collided with a fence, before coming to rest about 100 metres from the strip.						
The pilot had had no disciplined instrument flying experience and had been unable to maintain effective control of the aircraft during the take-off with severely restricted visibility. The degradation in aircraft performance as a result of the frost covering the wings and tail surfaces could not be established.						
28 Jun 85 1951	Smith 600 VH-IGV Bankstown NSW	43	1000	Commercial 500	Instrument rating 1st class or class 1	8521041
The landing gear was selected down during the downwind leg of the circuit, and the gear down lights were illuminated. The aircraft touched down normally, but as soon as the nosewheel contacted the runway, the gear warning horn sounded and the nose-gear retracted. The aircraft slid to a halt on the centre-line of the runway.						
Inspection confirmed that the landing gear system was serviceable. However, the cause of the gear collapse was not positively determined.						

In brief In brief In brief In brief

While in the cruise, nine inches of one propeller blade of a PA32 broke off. The blade separation caused severe vibration, which in turn necessitated an immediate forced landing. The aircraft was substantially damaged during the landing roll, although none of its three occupants was injured.

Investigation revealed that the propeller tip separated because of high cycle fatigue at a nick on the prop's leading edge. The nick had previously been filed down.

controls. Good instructors try to keep such interference to a minimum and prefer to talk a student through an exercise or problem. Perhaps on this occasion it should have been apparent to the instructor that the student was not responding normally to his 'go around' command — a term commonly used by most pilots and air traffic controllers. Some prefer 'overshoot' or 'make missed approach'. Whatever term is used, someone has to apply power promptly. If the student won't, then the instructor must.

* * *



* * *

A student pilot was undergoing a dual revision flight prior to a flight test for his Private Pilot Licence. After half an hour of air work he manoeuvred the Cessna 152 for a simulated forced landing in the low flying area. The student missed the selected paddock so height was regained for another attempt. This time the instructor told the student to 'go around' at about 50 ft AGL. He took no other action.

Two further calls to apply power were made by the instructor, by which time the aircraft was about ten feet off the ground before the student responded. However, he allowed the nose to drop, and, before the instructor could correct this the aircraft touched down on the soft, peat surface. Rapid deceleration brought the Cessna to a halt in about 30 metres.

It is often very difficult for an instructor to decide just how far to let a student go before laying hands on the

A Citation II business jet took off from an overseas airport on a rushed IFR departure in poor weather. The ceiling was 100 feet and visibility three quarters of a mile in fog. The aircraft crashed less than two miles from the runway, impacting in a 90 degree banked attitude. The pilot, who was president of the company that owned the aircraft, and his two passengers were killed.

The takeoff was commenced only about two minutes after the pilot had started the engines, and soon after leaving the ground he apparently lost control of the aircraft — partly because his main attitude and heading instruments had not 'spun up' to their proper functioning speed.

The pilot held a Private Pilot Licence and Citation type ratings, and had about 1750 hours on type. He had arrived at the airport between 0920 and 0925 hours, loaded the passengers and baggage, started the engines and had taken off by 0930 hours — his planned departure time.

The gyros in both the flight director (the pilot's main attitude reference) and the HSI required three minutes to spin up to their correct operating speeds. The pilot took less than five minutes to perform all the preflight, start-up, taxi and takeoff checks. Not surprisingly, the investigators believed that he could not have completed all the required items, including avionics and auto-pilot checks, in two minutes. An auto-pilot check itself could easily need at least 30 seconds, calling for proper flight director operation.

It was concluded that the pilot probably began the takeoff using his own attitude director indicator and the co-pilot's HSI. This would have disrupted the normal instrument scan pattern and helped towards disorientation and loss of control.

The investigators commented, 'This accident is a salutary reminder about the hazards of "kicking the tyres and lighting the fires", and treating any aircraft in an easy-going manner'.

* * *



Shortly after takeoff an oil leak was noticed on the inboard side of the starboard engine of a Piper Seneca. The oil flow appeared to be increasing and was sufficient to cause the pilot to terminate the flight and return to the departure base. After landing the engine cowl was removed and a small spanner was found lying on top of the oil cooler. It seems that the spanner had been in the engine compartment since the last 100 hour inspection (16 flight hours previously): during that time it had apparently been bouncing on the oil cooler, eventually causing it to split and leak.

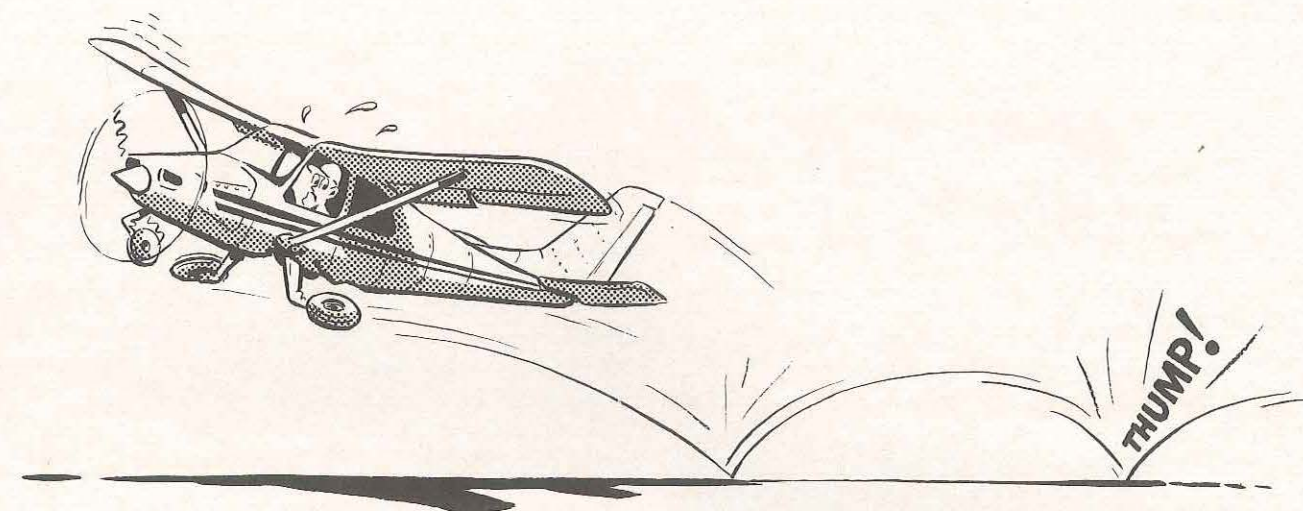
From the *South China Morning Post*, Hong Kong: Two Civil Aviation Department staff were slightly injured when their car plunged into the harbour from the airport runway last night. The driver and his assistant were discharged after treatment at Queen Elizabeth Hospital.

The accident happened shortly after 8.30 p.m. when the vehicle, a friction-tester, ran out of control at the end of the runway.

The First Officer was flying an F27 on a VMC approach at an overseas location. The Captain assessed the approach as being too low on final, but allowed the approach to continue without taking any corrective action. The aircraft landed hard in the undershoot area, 38 metres before the runway threshold. It also struck an approach light (0.5 metres high) which caused a tear in the fuselage.

The hard landing was not reported and was only discovered three days later.

During the preflight I checked the fuel gauges, which both indicated barely above EMPTY. I then checked the log against the tachometer time and noted that 0.9 hours of flying time had elapsed since adding 10.5 gallons of fuel. Since the average fuel consumption for this plane is 5 gallons/hour, I felt reasonably assured that I had one hour's fuel left in the tanks — enough for the proposed short flight ... I took off and at about 300 feet altitude the engine started to run rough, but the application of carburettor heat seemed to cure the problem, and we continued to climb out. The engine then seemed to develop icing repeatedly ... although the outside conditions were not what I normally expect to be conducive to icing ... At 5000 feet the engine power died completely, so we glided back to the airport, making a safe landing and coasting up to the fuel pumps. I checked both fuel tanks and got not one drop of fuel from either ... Probable cause: fuel stolen from airplane since last use ... Prevention — thorough preflight inspection.



During the preflight weather briefing the pilot was advised that thunderstorms were active near his destination. He nevertheless decided to press on with his two-hour, VFR navex.

After flying over adverse weather for most of the trip and overflying a suitable diversion airport, he continued in weather conditions which necessitated track and altitude deviations to remain in VMC. About one and a half hours after takeoff, both radios and one NAV/COM set in the PA28 became inoperative. A short time later the pilot noticed what he thought was an airstrip, and finally decided that it was time to terminate the flight.

The landing area in fact turned out to be a drag strip, which had numerous obstructions. While the pilot was manoeuvring to avoid those obstructions, the Warrior's left wing struck a 4-foot high pole, causing substantial damage to the aircraft and injury to its occupants.

A pilot had recently completed his tailwheel aircraft endorsement and was carrying out solo practice. On the first circuit the aircraft touched down before the runway threshold and groundlooped to the right. The left main gear leg collapsed and the aircraft tipped onto its left wing and the nose before coming to rest.

During the approach the pilot's attention had been diverted to another aircraft which had turned onto final in front of his own. To avoid a go-around the pilot reduced airspeed and continued to concentrate his attention on the preceding aircraft. In doing so he misjudged the approach and was unable to maintain directional control after touchdown.

An inexperienced private pilot, who had just completed a Cessna 172 endorsement, was carrying out circuit practice with a passenger on board.

The first two circuits were carried out normally, but on the third approach at 65 knots and with 20° of flap selected, when the flare was initiated the aircraft ballooned slightly. The Cessna bounced, so the control column was held back, but a second bounce occurred so the pilot applied power for a go-around. Unfortunately, the application of power was too late, and as the nosewheel tyre struck the ground it burst. The pilot and passenger escaped injury but the aircraft was substantially damaged.

Comment

When approaching to land at an airstrip or aerodrome, pilots must be prepared to make a go-around if there is the slightest doubt that the landing will not be safe. It costs much less to go around and make another approach than it does to repair a damaged aircraft — or pilot.

For those who always 'grease 'em on', but wish to refresh their memories just in case, recovering from bounced landings was discussed in *Aviation Safety Digest* 117.

During the day the members of a microlight flying club in New Zealand had flown a Teratorn aircraft on several occasions. However, on a subsequent flight, at a height of about 25 feet AGL a loud 'crack' was heard and a complete loss of engine power occurred. Insufficient height and speed were available for the pilot to flare the aircraft successfully so it was landed in a nose-down attitude. The undercarriage structure collapsed on impact and a failure of the structure which supported the engine caused it to strike the pilot on the head.

The pilot's head was protected by a full-face motor cycle helmet and he escaped injury.

A subsequent tear-down examination of the engine disclosed that the engine failure was probably caused by faulty wiring to the ignition cut-out switch ●

Just as the gun is always loaded...



An early arrival was made at the GAAP airport to carry out the daily inspection on a Cessna 172 prior to a planned pleasure flight with two passengers. The pilot reported that during the internal inspection he checked, among other items, the throttle and mixture controls. The check of those items was made visually, i.e. the pilot did not physically operate them through their range nor then set them to the recommended positions. He also verified that the key had not been inserted in the magneto/start switch, and observed that the park brake appeared to be on. He then removed the gust lock and proceeded with the external inspection. Having finished that, he returned to the cockpit and turned the master switch on in order to retract the flaps. The master switch was turned off and the pilot again confirmed that the ignition key was not inserted (it was in fact stowed safely in the Cessna's map compartment).

At this stage the pilot decided to check the compressions of the engine. With the passengers standing at the port wingtip as instructed, the pilot began to handswing the propeller. On the fourth compression the engine suddenly fired and started running.

The pilot ran to the door and looked for the ignition key, intending to turn it off as a means of quickly shutting down the engine: in the pressure of the moment he had forgotten that he had observed the wise precaution of not putting the key in the magneto/start switch while completing his inspection and while handswinging the propeller. He then reached for the mixture and throttle controls — but as he did so the aircraft began to move.

Despite the desperate attempts of the pilot and passengers to stop the Cessna (attempts which in themselves seem to have involved considerable danger to those concerned), the aircraft eventually ran into a drainage ditch and was substantially damaged.

Investigation

Post-accident examination of the cockpit showed that:

- the throttle was open about three-quarters of an inch
- the mixture was off the idle cutoff stop by about one-sixteenth of an inch
- the park brake was only partially on

A continuity check of the ignition switch leads through the ignition switch revealed that the right magneto was intermittently 'live' with the ignition switch in the OFF position. There would have been no way of knowing that the right magneto was 'live' without starting the Cessna's engine and carrying out a 'dead' magneto check.

Conclusion

It would have been a sharp-eyed pilot who could have seen that the throttle and mixture levers were not fully closed, given the minute distances involved. Similarly, the visual check of the park brake was inconclusive. A physical check was necessary.

Because the engine controls were set to permit the engine to run, and because of the live magneto, the engine unexpectedly fired during the preflight inspection. Before handswinging the propeller, the pilot had neither chocked the C172 nor set the park brake properly, while there was not a suitably qualified person in the cockpit. Thus, when the engine started, the aircraft ran out of control and crashed into a ditch.

This occurrence illustrates the importance of the quality of daily and preflight inspections — it's not enough simply to 'do' them; they've got to be good. It also confirms the adage that: 'Just as the gun is always loaded, so the propeller is always alive'. Finally the accident provides a good reason for carrying out engine 'dead cut' checks by turning the ignition switch/es momentarily to the OFF position at low RPM following an engine run or just before shutting down ●

Corrigendum

The article 'Ultralights and low-level turbulence' in *Digest* 126 made the comment that stall speed doubles in a level 60 degree bank turn. That of course is incorrect: the article was intended to read that the load factor doubles, and the stall speed increases by about 40 per cent. Ultralight pilots would also be aware that at the time *ASD* 126 was issued, no two-seat ultralights, as depicted in the article's photograph, had been approved by the Department of Aviation for flying training — the particular photograph was reportedly taken during authorised flight tests ●

Reader contribution: A timely diversion



'A picture is worth a thousand words', or 'Every picture tells a story' — take your choice of either of these aphorisms. Each encapsulates the safety message graphically illustrated in the two photographs of a timely diversion.

The Bonanza was carrying the pilot and five passengers, and had departed on its flight in the morning in clear weather. After one refuelling stop the trip was continued. On this second leg a series of tropical storms was encountered. The pilot managed to skirt around this weather until, when about 20 minutes

from the destination, and with the terrain becoming rugged, the clouds started to close in and visibility began to decrease.

In the interests of safety, the pilot elected to land while he still had time on a nearby ALA.

The photographs tell the story — the first shows the adverse weather confronting the Bonanza pilot, and the second shows the aircraft and its occupants safely on the ground after the right decision had been made at the right time ●

The residual effects of alcohol

The immediate effects of alcohol on an individual's performance are generally well appreciated and are apparent in the widespread social condemnation of drinking and driving. Perhaps less well understood are the residual effects of alcohol — the degradation of performance which can still occur when the short-term influence of alcohol consumption has dissipated.

Alcohol consumption

The alcohol you consume in beer and mixed drinks is simple ethyl alcohol, a central nervous system depressant. From a medical point of view, it acts upon your body much like a general anaesthetic. The 'dose', of course, is generally much lower and more slowly absorbed in the case of alcohol. But the basic effects on your central nervous system are similar.

You have undoubtedly heard time and time again that alcohol is a depressant not a stimulant. Yet after one or two drinks you certainly feel stimulated. This sensation is misleading and occurs because part of the depressant action of alcohol, working on the brain, brings about a release from the usual psycho-social restraints and inhibitions. You may enjoy a feeling of security, well-being, confidence, and freedom from pressure. In reality, however, your thinking has become sluggish, you respond to urgent situations less efficiently, and your ability to perform simple tasks with speed and accuracy is diminished. If in addition you happen to be tired, hungry, or under stress, these handicaps will be compounded.

The effect of alcohol is greatly multiplied when a person is exposed to altitude. Two drinks on the ground are equivalent to three or four at altitude. The reason for this is that alcohol interferes with the ability of the brain to utilise oxygen. And the effects are rapid — first because alcohol passes so quickly into the bloodstream, and second because the brain is a highly vascular organ, immediately sensitive to changes in the blood's composition. For the pilot, then, the lower oxygen availability at altitude, along with the lower capability of his brain (under the influence of alcohol) to use what oxygen is there, adds up to a deadly combination.

How long is performance affected?

The approach to alcohol and flying by Australian pilots generally seems very mature, and there are few recorded examples of people trying to pilot an aircraft while suffering from the immediate effects of alcohol. However, what many pilots may not appreciate is that the deleterious consequences of drinking can adversely affect performance for up to 48 hours. This was clearly illustrated in a series of experiments conducted in the United States, the results of which were reported in the *U.S. Army Aviation Digest*.

Tests were conducted in a flight simulator on volunteers, using a blood level of 0.08 per cent (which is considered to be a safe level by some). Almost without exception the subjects exhibited very serious errors of omission.

These errors, had the aircraft been real, frequently would have resulted in fatal mishaps, and at least would have resulted in placing the plane and its occupants in potentially dangerous attitudes and situations. The most interesting finding overall was that the effects of the



The deleterious effects of drinking can adversely affect performance for up to 48 hours.

alcohol were greatest on those pilots who, on non-alcohol flights, had shown themselves to be the smoothest, best co-ordinated, most flawless and coolest under pressure. If they were relaxed when they mounted the flight simulator, this condition was drastically changed by the alcohol, and performance deteriorated accordingly.

Behaviour such as dumping fuel, inadvertently putting the landing gear down at high speeds, placing the aircraft in irrecoverable attitudes, and attempting to land at 10 780 feet rather than 780 feet (the local field elevation) were but a few examples. So that these findings could not be attributed to chance, the experiments were repeated using different subjects, with basically the same results.

A follow-on study then examined the effects of alcohol on errors of omission, e.g. forgetting an important function or overlooking an important detail. For this study emphasis was placed on how accurately subjects could follow a preflight checklist. Seventy-eight items comprised the checklist which each subject took on every flight. The task in this experiment was basically the same as that of any pilot: to begin with the first item and, sequentially, perform each function listed continuing systematically down the list until all items had been completed.

Prior to all flights, the experimenters, without the knowledge of the subjects, pre-set several errors:

- brakes OFF
- landing gear handle UP
- altimeter mis-set by 1000 feet

Close adherence to the checklist should have caught



The effects of alcohol may lead to disorientation and abnormal eye movements.

all of the pre-set errors. Each subject 'flew' two test flights, one without alcohol and about 1 month later one with alcohol (0.08 per cent blood alcohol level). The results were as follows:

- Under the no-alcohol conditions, 11 per cent of all subjects failed to correct at least one major pre-set error.
 - Under the influence of alcohol, 79 per cent of all subjects failed to correct at least one major error.
- These pilots, it should be remembered, were considered legally sober and capable of driving an automobile in most States.

Most of the experiments were conducted in the late afternoon or early evening. It was noticed that some of the subjects complained in class the following morning that they still 'felt lousy' due to the previous day's flight. A check of the literature showed that the amounts of alcohol ingested essentially should have metabolised easily within 10 hours after drinking. In addition, from perusal of airline publications and military aviation journals it also was noted that the general rule of thumb for social drinking recommended to pilots was to allow 8 to 12 hours between 'bottle and throttle'. It was thought at that time that, although there was no longer any detectable alcohol in the blood, hangover effects might still produce a decrease in performance of complex tasks such as the psychomotor responses required in flying. A recent study followed this line of reasoning as tests were commenced on the so-called 'hangover' or residual effects of alcohol. The results are presented in abbreviated form here.

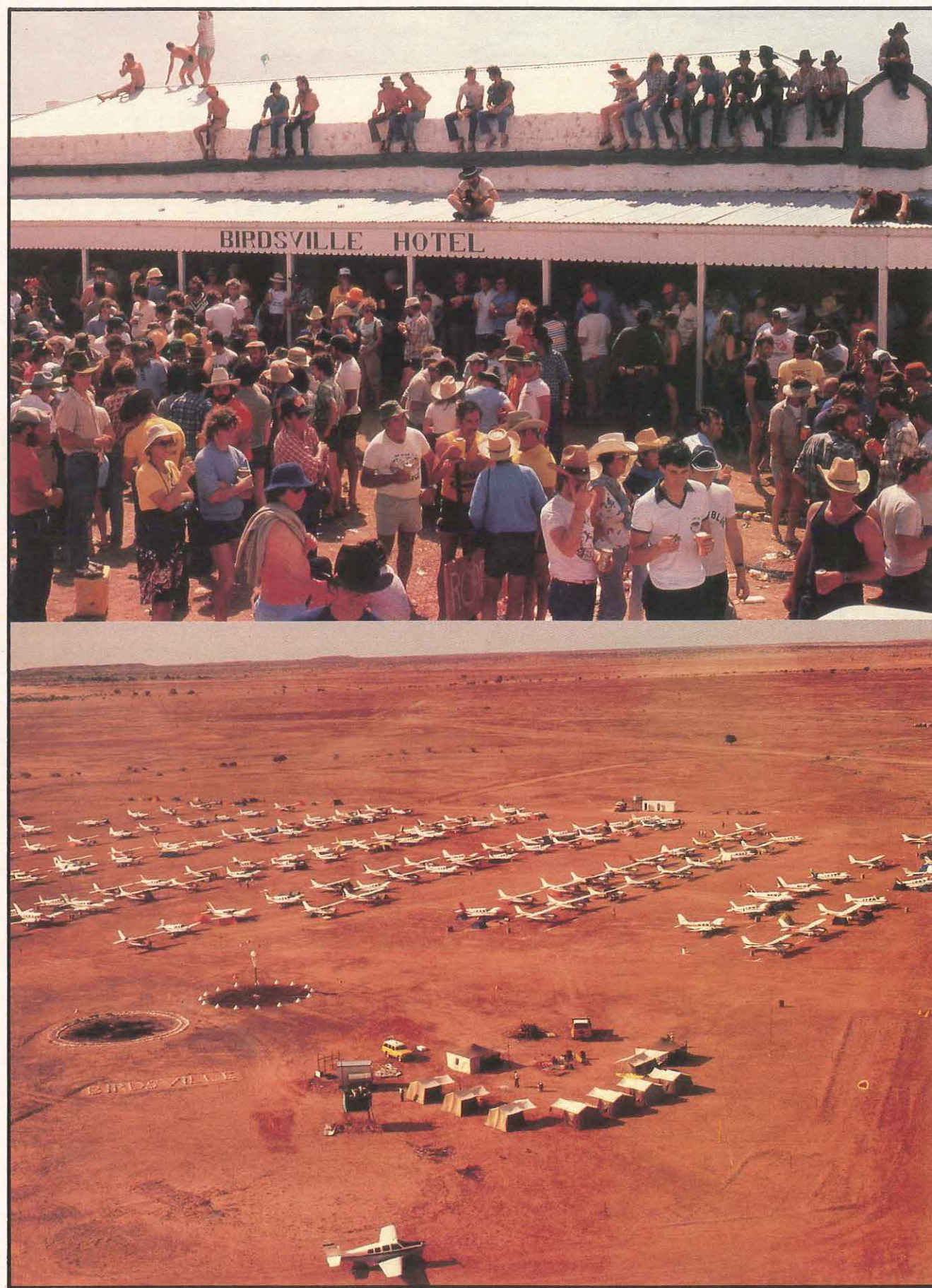
The subjects already were familiar with preflight, inflight, and postflight checklist responses and the basics of flying prior to the experiment proper. A 6 inch by 9 inch card containing a detailed checklist was given to each subject and all subjects were told to adhere to it religiously. This was followed by actual 'hands on' simulated flight consisting of takeoff, climbout, levelling at altitude, and full-stop landings. When the subjects reached the point where they could successfully handle these fully checklisted 'flights' at least three times consecutively without the slightest error, the experiment proper was begun.

After this pre-training but before the first test flight (non-alcoholic), the following errors were pre-set by the experimenters:

- brakes were placed in the OFF position
- landing gear handle was put in the UP position
- fuel select switch was placed on auxiliary tanks
- wing flaps were set at 50 per cent
- altimeter was adjusted to 1000 feet above local ground level.

At the preflight briefing, each subject was told to take off, climb to 6000 feet, and maintain that for 5 minutes. When requested to do so, the subject was to prepare for a landing and complete the landing at his discretion. The main data for the non-alcoholic flights consisted of the number of pre-set errors each subject failed to correct prior to takeoff.

The only essential difference between the flights described above and the second test flight (alcohol) was that, 30 minutes before the alcohol flights, each subject



was given enough 80 per cent vodka mixed with an equal amount of ginger ale to attain a blood alcohol level of 0.10 per cent.

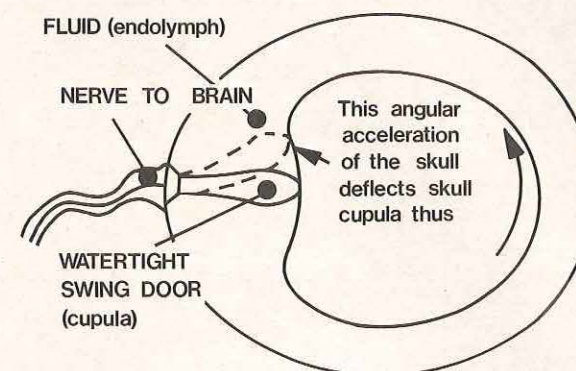
Finally, a third test flight was given 14 hours after the alcohol flight.

The results were interesting to say the least. During the first test flight (non-alcoholic), 10 per cent of all subjects overlooked at least one of the major pre-set errors. For the alcohol flight, 89 per cent of all subjects made at least one oversight error. Fourteen hours after alcohol intake, 68 per cent of all subjects still overlooked at least one pre-set error! It is apparent that performance 14 hours after alcohol intake was much more like that 30 minutes after intake than that of the first, non-alcohol flight.

This evidence suggests that although most, if not all, of the alcohol had been processed through the body during the 14 hours following intake, the residual effects were contributing to this performance deterioration. All pilots should be aware of this residual effect and should rethink and possibly recalculate the margin of safety implicit in the old rule of thumb, 8 to 12 hours between 'bottle and throttle'.

What are the causes of the residual effects?

1. One effect of alcohol consumption is a temporary alteration of the fluid balance. Drinking dehydrates your body by stimulating the kidneys to produce an abnormal volume of diluted urine so that the body loses more fluid than it takes in. This dehydration produces a concentration of all the solutes normally found in body fluids, and that alcohol-induced chemical concentration causes weakness, fatigue and irritability.
2. Another element in the making of a hangover is the assortment of organic impurities found in all alcoholic beverages. These aldehydes, ketones and other substances are metabolised in complex ways and may remain in the bloodstream long after the alcohol itself is gone. As long as these substances are present they produce untoward other side effects.
3. Some of you may have noticed that after a heavy night's drinking you have, as they say, to wait for the bed to go past before you can jump onto it and that things get even worse when you lie down. This happens because of the relationship between vestibular (inner ear) stimulation and eye movements.



The semi-circular inner ear canals are best regarded as angular accelerometers. Each one is a fluid-filled tube with a watertight swing door across it. The fluid tries to stay still because of its inertia

and deflects the door one way or the other depending on the direction of the head's angular acceleration, whether produced by voluntary head movement or by some external motion such as aircraft yaw, pitch or roll. Head movements detected by this system are used to stabilise the visual world on the retina by the elicitation of eye movements, i.e. eye movements are made to compensate for head movements in order that the world does not appear to fly about on the retina. You can check that this happens by nodding while reading this — you should still be able to read it. If however, you wave this journal up and down instead of nodding, then you cannot read it.

In order for this system to work, the watertight door must be unaffected by linear accelerations such as gravity and, to be so unaffected, the door must have the same specific gravity as the fluid. Alcohol in this system disturbs this specific gravity balance. The flap tends to float and the deflection is interpreted as a head movement and a compensatory eye movement is made. However, as no real head movement was made, the eye movement is inappropriate and the subject perceives the world to move. This effect follows closely on the consumption of alcohol and is known as Positional Alcohol Nystagmus (Phase 1) or PAN 1. As the fluid and flap come into alcoholic imbalance, there then follows a phase when there is an absence of abnormal eye movements, and this is followed by a second phase of Positional Nystagmus. The further phase (PAN 2) is caused by an imbalance of specific gravity between the fluid and the door as the system loses alcohol. (Alcohol remains in this system well after the blood levels have become negligible.) With increased g forces the imbalance is effectively amplified.

The upshot of all this is that the abnormal eye movements that are evidence of vestibular problems can be produced up to two days after drinking the equivalent of only a couple of pints of beer if the subject is exposed to two or three g, and this effect can be demonstrated long after no alcohol can be detected in the blood.

The precise significance as far as flying is concerned is difficult to determine — but it can safely be said that if you find yourself in an unusual attitude being subjected to unusual accelerations, then the effects discussed above may well lead to you becoming disoriented when you might otherwise not have been and, once disoriented, will make it more difficult for you to recover the situation.

Alcohol, even after it has been metabolised and excreted from the body, as indicated by blood alcohol levels, leaves its effect on your central nervous system for a long time. The untoward effects of alcohol last very much longer than most of us appreciate.

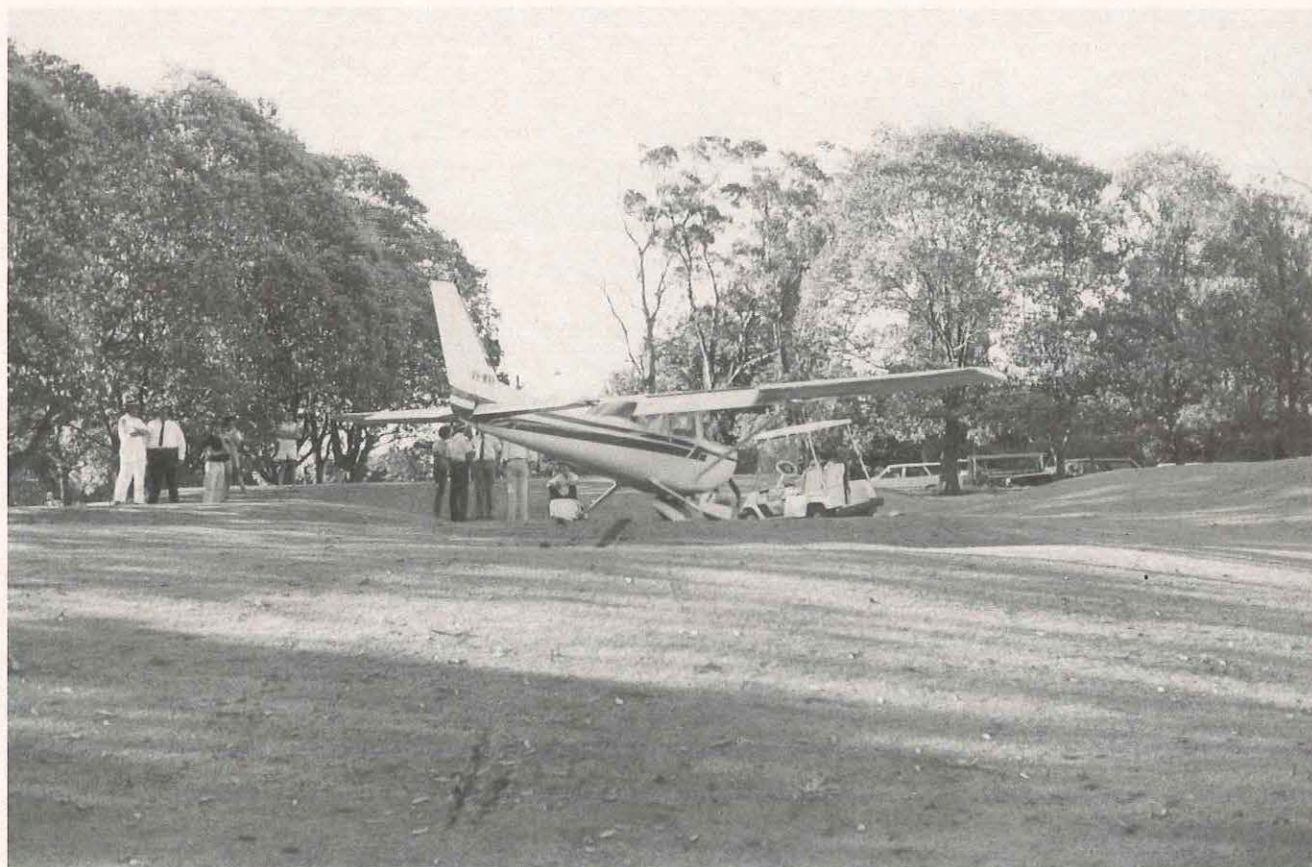
Conclusion

The prevention of the short term and long term (hangover) effects of alcohol is simple — don't drink.

The cure for a hangover also is simple — wait; and before taking to the air you may need to wait 48 hours.

Remember — alcohol can kill ●

Spark plug fouling



A Cessna 152 was cruising at 2000 feet and 90 kts with the engine set at 2300 rpm. The student pilot was 'under the hood' practising instrument flying when the instructor noticed a flock of birds immediately in front of the aircraft. He took the controls and rolled the aircraft to the right but several birds were believed to have struck the aircraft in the vicinity of the engine before it had commenced to turn.

Several minutes later the instructor noticed the oil temperature needle was on the red line and the oil pressure indication was on the 'bottom of the green'. He said he selected the mixture to full rich, reduced the power to 2000 rpm and descended to 1800 feet. After approximately 2 minutes no noticeable change in oil temperature or pressure was evident so the pilot climbed the aircraft back to 2000 feet. After cruise power was set the engine started to miss intermittently. The instructor advised Flight Service of the birdstrike and the engine over-heat condition, and also that he intended to track direct to his destination (a GAAP aerodrome), about 8 minutes away from his present position.

Shortly afterwards the engine began to run rough continuously. At the time the Cessna was over a golf course, and as the remainder of the flight was going to be over residential areas, the instructor decided to make a precautionary landing on to the golf course. From the air the area he chose appeared mainly level, with a slight up slope at its northern end. He elected to land towards the north-west and accept a light tail wind.

When the aircraft was at about 100 feet on final approach, it became evident that the selected landing area initially sloped down. The Cessna landed about halfway along a fairway, but as there was a gutter which crossed the landing path, the pilot did not attempt to brake. He was able to 'pull' the aircraft off the ground to clear the gutter. Heavy braking was commenced when the aircraft touched down again and, as it passed over terraced tees which had soft surfaces, the nose wheel and propeller 'dug in'. The Cessna came to rest on a tee near the golf course boundary.

Investigation

The cause of the rough running of the engine was found to be, not the birdstrike, but lead fouling of several spark plugs. The birdstrike was a factor, however, in the pilot's decision to carry out a precautionary landing—a decision which was prudent in the circumstances.

A reason for the reported high engine oil temperature was not determined, but it was probably related to the rough running.

Discussion

While spark plugs which reduce the possibility and effects of plug fouling are available, the problem remains fairly common among GA aircraft. Some engines seem more prone to fouling than others, but the phenomenon is sufficiently widespread to warrant the attention of all pilots and LAMEs. Listed below

are ten operating recommendations which, while taken from a Lycoming Service Letter, have general applicability.

Operating recommendations

- Ensure that your engine is fitted with the correct spark plugs. Do not simply replace plugs with those of the same part number, as someone before you might have installed the wrong plugs. Refer to the appropriate references to determine the specified part number.
- Do not accept an over-rich carburettor or fuel injector at idle or off-idle engine speeds: always have the mixture adjusted if necessary.
- After a flooded start, slowly run the engine to high power to burn off harmful lead deposits, then return the engine to normal power.
- When parked for extended periods, avoid idling with low rpm. Although Avgas contains a lead scavenging agent, it only functions with a spark plug nose core temperature of 800°F. To achieve that temperature a minimum of 1200 rpm are required; thus 1200 is a good setting for ground operations (excepting taxiing, where appropriate rpm must obviously be used). At 1200 rpm the engine will also run cooler and smoother, and alternator or generator output will be higher.
- Use normal recommended leaning techniques during the cruise regardless of altitude, and re-lean the mixture if carburettor heat or alternate air is selected. For training establishments, aircraft should, if possible, not be used exclusively for circuits, where the mixture almost invariably will be full rich: try to schedule all aircraft for a share of

cross-country flights.

- Plan ahead inflight and avoid fast, low-power descents from cruise altitudes. Descend with power on and avoid over-rich operations.
- If possible (and commensurate with good airmanship) try to avoid power-off landing approaches, as carburettors and fuel injectors are set slightly rich at closed throttle.
- Keep engine-operating temperatures in the normal operating range—some pilots seem to harbour the misconception that the lower the temperature the better it is for the engine. Also keep cylinder head temperatures within the normal operating range by use of normal power settings, proper leaning, and correct use of cowl flaps. In extreme winter temperatures oil cooler baffles may be necessary to maintain satisfactory oil temperatures.
- Swap top and bottom spark plugs every 25-50 hours, as the top plugs scavenge better than those at the bottom. (Note: this recommendation is considered to be particularly significant.)
- Before shutdown following either flight or ground operations, go to 1800 rpm for 15-20 seconds, reduce to 1200 rpm, then shut the engine down immediately using the mixture control.

Comment

As usual, prevention is better than cure. When supplemented by the manufacturer's instructions for your aircraft's particular engine type, the guidance given here should help you to avoid the potential hazards of spark plug fouling ●

Monitoring 121.5

Aeronautical Information Circular CO 10/1985 commented, among other things, that ... 'inflight monitoring of the distress frequency, 121.5 MHz, is common practice with many pilots engaged in International, Domestic or General Aviation operations. Such monitoring, whether conducted continuously or merely to the extent that a particular operation will allow, is beneficial to the SAR organisation and is a practice which all pilots should adopt where practicable'.

An experienced pilot has recounted to the *Digest* an occurrence in which his long-standing habit of listening out on the distress frequency paid handsome dividends for a group of survivors.

Listening out

'For many years I have been listening on 121.5 whenever I am flying an aircraft with a spare VHF. I have also advocated this practice to many other pilots, particularly during multi-engine endorsement training. I realised the value of this practice from flying internationally.

'In fact, for several years I have inserted the following paragraph in the operations manual of about three air charter companies of which I have been the chief pilot:

"If a second VHF is carried, a listening watch shall be kept at all times when practicable on 121.5 MHz."

'Apart from listening for emergency beacons, the practice has been advantageous several times when establishing contact with or from other aircraft when other frequencies have failed to make contact. These examples have occurred both in Australia and overseas.

'Recently during a flight from Cairns to Daru (Papua-New Guinea), approximately 40 nm east of Lockhart River, this practice hit the jackpot. I commenced hearing a weak emergency beacon signal and immediately reported this fact to Weipa Flight Service Unit.

'The story as I later heard it was that the Coastwatch aircraft was immediately despatched to the area and, subsequently, a State emergency helicopter rescued three people from an uninhabited island: they had been there for four days after their yacht had sunk. The beacon had been transmitting during this period and its battery was nearly flat.

'A recent AIC has advised listening on 121.5, and my experience certainly confirms that advice as these three people would possibly have otherwise perished'●