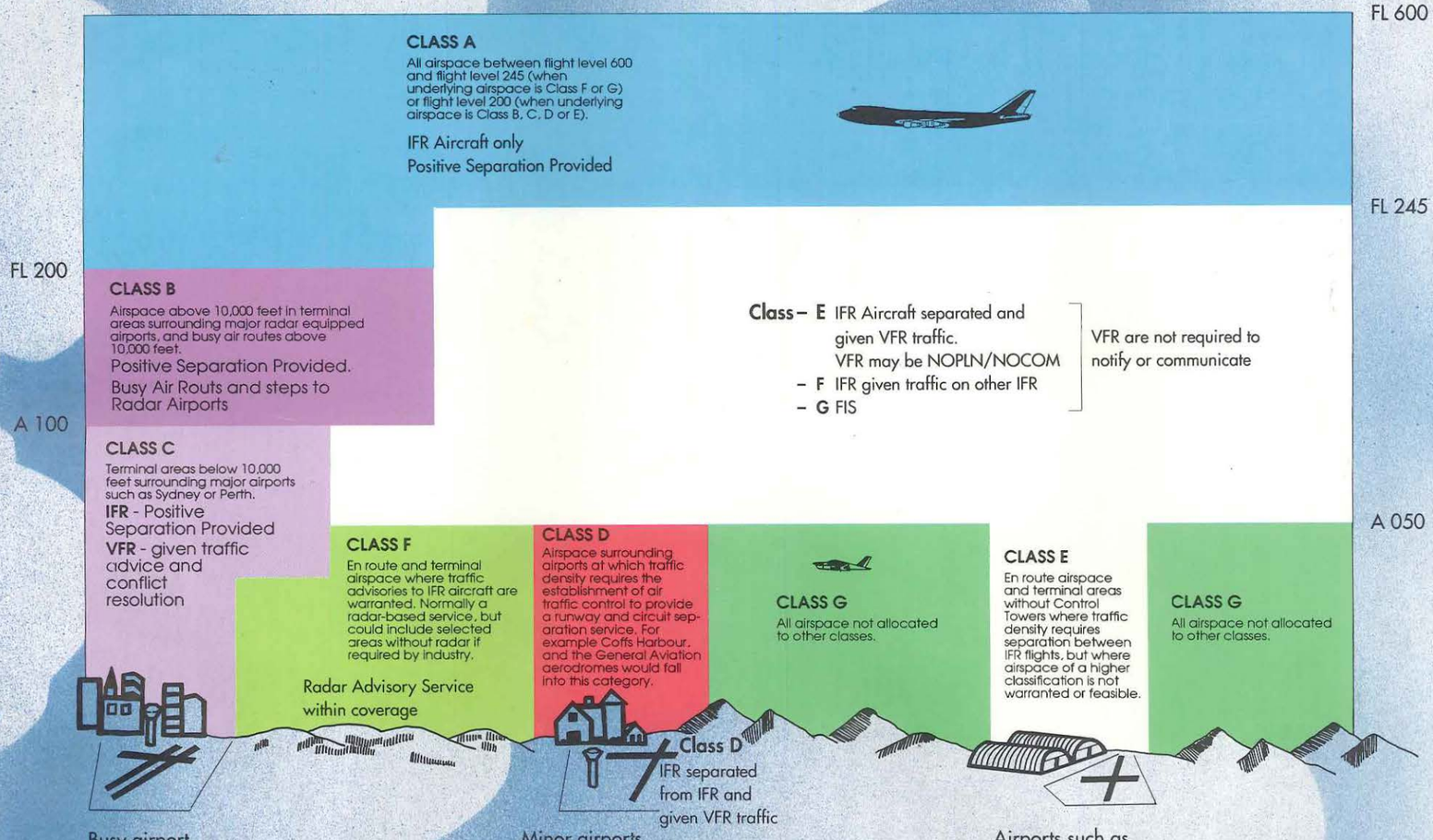
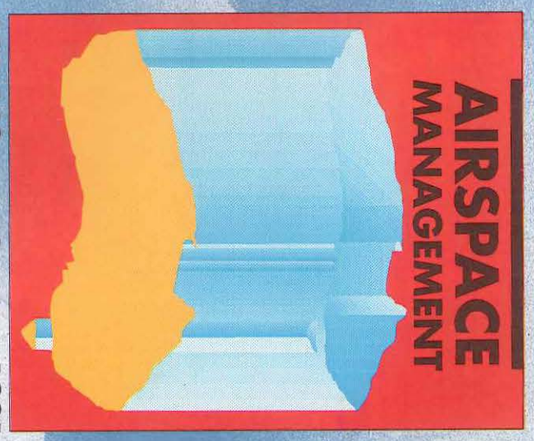
RESTRUCTURING AIRSPACE

The central feature of the new system is the airspace classification.



Aviation Safety Digest



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My view of AMATS

By Terry Walls, Manager Safety Promotion Unit

THERE HAS BEEN much debate in recent months by some within the industry (and some within the CAA) about whether or not the proposed new airspace management system (AMATS — Airspace Management and Air Traffic Services project) will have a detrimental effect on safety, particularly as it relates to Class G airspace.

I have been actively involved in AMATS discussions with specialists from both Airways Operations and Safety Regulation Groups of the CAA. I have also taken every opportunity of talking to a wide range of both private and commercial General Aviation pilots.

It appears to me that most of the uncertainties expressed about operations in Class G airspace result from a failure to appreciate the nature of current operations in the 'remote' locations and misunderstandings about the services and procedures which will apply under the AMATS proposals. This is not the fault of the industry, individual pilots or ATC or FS. Pilot education has been identified as a high priority of the implementation phase and it has only just begun in earnest.

You will all be reading, seeing and hearing a lot more about the proposals; this *Aviation Safety Digest* is just one example of our commitment to ensure that you are well briefed. The CAA/AOPA Safety Awareness Program for 1991 has an emphasis on the safety aspects and you will be able to discuss your own concerns with CAA officers at many aviation events during the year. Three separate videos are planned — one to explain the broad philosophy, one to provide details of operating in the various Classes of airspace and one which will concentrate on flight safety. The first has been completed. AMATS Bulletins have already been distributed and pilot briefings are taking place on a regular basis.

Pilots would be well aware that VFR aircraft operating in what we now describe as OCTA do not receive traffic advisories. In addition, there are numerous NOSAR/NO DETAIL and, in quite a number of cases, NO RADIO flights taking place each year in this airspace.

Statistics quite clearly show that these take place with a high level of safety: over the past ten years, there have only been nine mid-air collisions between powered aircraft or powered aircraft and gliders throughout Australia. Of these only one can be truly described as in cruise — the remainder occurred in the circuit area. The way I see it is that it is because of the standard of our pilots and their application of sound and proven procedures that Australia has had such a clean record in this regard. Pilots do know how to use their radios (irrespective of the category of operation) to identify potential conflicts and maintain separation from other aircraft. It is common practice for pilots to call up other aircraft approaching waypoints or aerodromes and advise the other pilots that they were in the vicinity and that they were, say, moving to left of track or advising of actual altitude.

This is all the new procedures requires. In fact, it will be safer because all aircraft will be operating to the same procedures, on the same frequency.

As the articles in this issue illustrate, operations in all classes of airspace require a certain level of airmanship and situational awareness. I have no reason to doubt the Australian pilot's ability to adapt to new procedures and practices.

AMATS proposals have been the subject of extensive consultation with industry; as a result some changes have been made since some of this magazine's articles were prepared, in order to accommodate industry needs. Details of these changes have been communicated to aviation organisations.

Finally, to ensure that all changes are introduced appropriately, the commencement date for implementation of AMATS will now be in October 1991.

Terry Walls has been seconded to the AMATS Project Team, to add his expertise in the promotion of aviation safety.

Editorial

FOR obvious reasons, CAA Airways Operations Group is well represented in this edition. Whereas AMATS is simply the furtherance of international standards in Australian civil aviation, ASD's concern is not so much about an increase in efficiency (the beancounters can measure that), but for the promised greater safety in the air.

The articles themselves are self-explanatory. Responsibility is shifted towards the operator, who, over the greater part of Australia, can select the level of service desired.

The introduction by Mr Walls fleshes out these thoughts; it only remains for me to note that flight safety will now even more depend upon pilot efficiency (= airmanship), and it's up to us to make the new rules work in our favour.

Let's look at 'See and Avoid'...

— there's more to it than meets the eye

Mike Kelly, Superintendent ATC Procedures, Head Office

'SEE AND AVOID' is a principle of good airmanship that requires the pilot to be an active contributor to flight safety. Since nobody wants to make the six o'clock news by being involved in an aircraft crash, we all have a very personal interest in avoiding other traffic, obstacles and terrain.

Whilst, at first glance, it indicates a reliance on the pilot to 'see and avoid' other traffic, there is more to this aspect of safety than just being a good looker. Although this article is mainly for the VFR pilot, there are points the IFR pilot should consider also.

During flight planning

It could be said that 'see and avoid' starts before a pilot straps into the aeroplane. Before commencing a flight (even a local flight) we can start planning to 'see and avoid'.

Consider the weather

Look at the weather forecasts for an indication of the conditions to be encountered. A good pilot will:

- try to take advantage (or minimise the effect) of the winds at the most economic cruising levels;
- consider whether it is possible to operate in complete VMC.

  An IFR pilot may consider accepting a minor cost penalty to operate in VMC (much reduced chance of icing), albeit at an IFR cruising level.

Study the route options

Consider the preferred route. VFR pilots should plan to fly around areas of high terrain if the weather forecast indicates marginal VMC. Similarly, IFR pilots should consider the forecasts against route lowest safe altitudes to make contingency plans should airframe icing conditions require the aircraft to descend.

Avoid busy or hazardous places

When operating in Class E, F, or G* airspace plan to avoid busy areas such as Military Low Jet Routes, Gliding and Hang Gliding areas, Parachute areas and Danger Areas. A quick look at the map and check of NOTAMs will show where these activities are taking place. It is also beneficial for VFR pilots to become familiar with the location of RNC routes. These are routes that are regularly used by IFR traffic.

Additionally, examine the charts for aerodromes that are serviced by radio navigation aids. In marginal VMC, IFR pilots will be using instrument descent procedures to set themselves up for a visual landing. The last thing the IFR pilot wants to see as he breaks out of cloud is a close view of a VFR aircraft scooting along just below the cloud base. A smart VFR pilot will plan to avoid these aerodromes as much as possible in marginal VMC.

**New AMATS airspace classification*

ICAO table of cruising levels

Having considered the above, cruising levels should be planned in accordance with the ICAO Table of Cruising Levels that will soon replace the 'Quadrantal Rule' in Australia. The ICAO table of cruising levels automatically provides 500 ft vertical separation between VFR and IFR aircraft whilst in the cruise phase of their flight.

It is permissible to fly at any level 'Below 5 000 AMSL', but as a principle of good airmanship, plan to cruise according to the ICAO table whenever terrain and weather conditions permit.

Immediately before flight
Look around — and listen

Strolling out to the aircraft to commence the preflight inspection, pilots naturally cast their eyes to the heavens to check both the weather and at the amount of traffic operating locally. The weather often dictates departures techniques and climb-out on track. The general performance of local circuit aircraft gives some clue as to the best time to roll.

Keep it clean

Part of the preflight inspection of the aircraft should include ensuring the windscreens are clean inside and out. Distant aircraft all start out as small dots, about the size of a speck of dirt on the windscreen. It could be that the difference is not noticed until too late! Similarly, ensuring that vision is not impaired by a film on spectacles or those expensive (and oh-so-stylish) aviator's sunnies is but a basic precaution.

Listen out

Once in the aircraft, get that radio switched on to the appropriate frequency as soon as possible to listen for other aircraft. Ask yourself 'What type is it?' (think about his speed and climb/descent performance), 'Who is it?' (try to remember the call sign), 'Where is it?' (coming from/going to), 'How will it affect my operation?'. These factors, assessable in an instant, lead naturally to the object of the exercise: 'How can I avoid a confliction?'.

During flight
Be conspicuous

In order to help other pilots see and avoid, use all means available to stand out from the background. Unless IFR flight, keep well clear of cloud and make sure the strobes are working.

In busy airspaces or whilst on climb/descent, some pilots make a practice of flying below 10 000 AMSL with their landing or taxi lights operating regardless of whether it is day or night (the Volvo Principle, only inappropriate if it needs gear down to achieve).

Tell others where you are

Most aircraft are radio-equipped, and radios are meant to be used, so please alert other pilots of your presence. In Class E,F, and G airspace, VFR or IFR, it is advisable to make a short transmission on the common traffic advisory frequency as follows:

- Taxiing prior to take off
- On departure
- Commencing cruise (at Top of Climb)
- If IFR, at Position Reporting points indicated on RNCs
- If VFR, over or near positions indicated on VECs or prominent topographical features on WACs at intervals of about 30 mins
- 5 minutes before passing over an en-route navaid
- Commencing descent
- Approximately 20 miles inbound to destination
- Joining the circuit (advise circuit leg and runway to be used)
- Clear of the Manoeuvring Area.
- When passing from one airspace to another briefly switch to the new frequency 5 minutes before entering the airspace. This will alert traffic operating just across the boundary that you are inbound. Allow a short period for a response and then return to the area frequency. Change to the new area frequency and broadcast again crossing the boundary.

Listen and talk

'See and avoid' may be the title, but 'look and listen' play just as important a part in safe flying. Broadcasting details of position etc will encourage others to do the same. In conditions of 'self-help', it is only sensible to know and be known. As mentioned in 'immediately before flight' above, listening to traffic reports will help to ensure separation even before take-off.

In circumstances where there is no separation service from ATC, it is a pilot responsibility to see and avoid all other traffic. The bottom line here is that traffic heard on the radio but out of sight may pose a collision risk. Therefore, get into contact and exchange information to ensure separation.

Even with a full separation service From ATC, be aware of the environment. To minimise restrictions on other aircraft the controller may ask, at short notice, to sight another aircraft. It is helpful to all concerned. Having heard of traffic in the vicinity, the pilot can start to look and may indeed have already sighted it. If however the other traffic is not yet visually acquired, the pilot should report '**Looking**' and, if not sighted, after a period of time, transmit **'Traffic not yet sighted. request avoidance advice'.**

Lookout

Clear your nose

The result of being a member of the species homo sapiens, and thus a hunter/gatherer, one of the things that attracts attention is movement. However, the worst case is the hardest to detect. This is where the relative bearing between two aircraft remains constant, ie there is no apparent angular movement to attract attention. This means that the other aircraft is either flying directly away from you (no problem), or directly at you (big problem). This much-loved-by-air-disaster-novelists situation is defined as a collision course, and the impending mid-air may remain unnoticed until the other aircraft ('target' to the military aviation novelists) suddenly starts to grow into view. By then it may be too late. The rate of growth, which means decrease in distance, is exponential, and is measured in parts of seconds.

Pilots who learned to fly from the back seat of the old tail-draggers were taught to weave slowly either side of track in the climb to cruising level. The purpose of this was to assist in the visual acquisition of aircraft that may otherwise be obscured by the aircraft nose, which extended far in front of the pilot. It is a practice not easily forgotten and is equally important during descent. Not only does this technique 'clear the nose', it also changes the relative bearing of potential collision risks, thus giving the hunter/gatherer's ability full rein (and don't forget, always look before turning — even if your flightplan says IFR).

Scan — pause — look — scan

Another peculiarity of the human eye is that only when it is stationary can it see things. Therefore any pilot who continuously sweeps the skies is indulging in self-delusion — literally, for the eye may report 'no traffic', when there's a b.... great twin-jet a couple of miles away. The correct scanning technique is to mentally divide the sky into quadrants and then scan in systematic repetition. Move the eyes a little bit at a time in each quadrant pausing to look for traffic. Remember, too, that during daylight distant objects are visible only to the eye looking directly at them.

Be far-sighted

Eyes can tend to be a little lazy. If there is nothing to see, the focus tends to drift in and comes to rest at about 2 metres from the aircraft, thus making those distant specks impossible to see. This is a major contributor to those crashes that happen on such a clear day that one can see for ever.

What can be done about this problem? Well quite a lot, as part of the scanning technique just discussed is to make a conscious effort to push effective vision back out into the distance. Look at distant features of terrain or cloud and bring them into sharp focus.

Cross-eyed

About every half hour, lift the index finger up at arms length and bring it in to touch the nose. It'll make you become cross-eyed briefly, but it's a good eye exercise, and although it might look odd to your companions in the aircraft, it may help to ensure that you remain around to fly those thousands of hours in GA aircraft all around the world.

Aircraft lanes

Think of them what you will, these have the effect of channelling aircraft into potentially hazardous head-on conflictions. Civil Aviation Regulation (CAR)162(2) effectively requires opposite direction traffic to pass each other 'port to port'. This can be achieved by flying to the right of centre along these channels. Careful navigation and the use of landing/taxi/strobe lights and broadcasts will obviously decrease the chances of an embarassing confrontation in these airspaces.

Overtaking

Even overtaking a slower aircraft in accordance with (CAR)162 and 163, with the other aircraft in sight, never forget that the other pilot may not have seen you. By all means be alert for a sudden change in direction or altitude by that aircraft, but do not become so fixated on it that you forget to continue to 'see and avoid' other traffic.

Airmanship

There is more to 'See and Avoid' than meets the eye (pun intended if you like). A lot of it is plain airmanship/common sense. There are going to be occasions when the aircraft safety will come down to the use of eyes, so.....**Look out**!

Operating in VMC means eyes out of the office, for what pilot wants to be the very first on the scene of the next aircraft accident?

Note:

In the Spring 1989 (ASD 142) Edition of the Australian Aviation Safety Digest, Dr Robert Liddell (Head of the Civil Aviation Authority's Aviation Medicine Branch) wrote an article on the physiological factors affecting the ability of the human eye in flight. It is an excellent article that should be mandatory reading for all pilots and perhaps motor vehicle drivers too.

Copies of the article are available by writing to :

Safety Promotion Unit
Civil Aviation Authority
GPO Box 367
CANBERRA CITY ACT 2601

A remote chance

by Wayne Hack, NSW Projects Officer, AMATS, FIS and NAIPS

WHILE THE NEW classification of airspace shortly to be implemented will allow for greater freedom in many circumstances, the enjoyment of that freedom will ultimately depend on self-disciplined professionalism on the part of the PIC

The trick cyclists tell us that too many pilots fail to think through possible emergencies while they are still in the (relative) safety of the flying clubroom. Possibly because the situation might be too horrible to consider, or because of the old 'she'll be right, mate' rationalisation, sensible courses of action in emergency for any given route are often ignored. I don't mean the drills to alleviate mechanical or electrical failure, but informed consideration of what the chances are of rescue, having clambered from an aviation insurer's nightmare somewhere back o'Bourke.

Search and Rescue (SAR) contingency planning should start long before the flight and include an understanding of the equipment in the aircraft and its correct application. Let's look at some of the basic equipment and the way it could be used to aid SAR efforts if needed.

A VHF radio keeps you in touch with Air Traffic Service (ATS) units within range on the traffic frequency in airspace Classes A to F. In Class G you will be able to talk to other aircraft operating on a common traffic frequency. Of course, provided you are within VHF range you can also call an ATS unit on the Flight Information Service (FIS) frequency in any class of airspace.

If you intend operating outside VHF coverage, HF is an alternative. This equipment will generally enable you to be in contact with an ATS FIS unit no matter what your level or location. Your aircraft may not be fitted with HF, in which case always consider the possibility of a high flier operating above you in Class A airspace who can relay your emergency message. The frequencies for these are to be found on Planning Chart A (AUS PCA-A), printed on the back of Planning Chart B (AUS PCA-B), the low level flight-planning chart that you should always have in your nav bag.

While in Class F and G airspace, voluntary position reports made on the FIS or other nominated frequencies will reduce the area required for a search should you fail to cancel SAR prior to the expiry of your SARTIME. For example, if you planned from Bankstown with a SARTIME for arrival at Bourke and the SARTIME expired, the search would commence at Bankstown. If, on the other hand, you had made voluntary position reports along the way, let's say, with the last one being at Dubbo before you were struck with difficulties, then the search would commence at Dubbo. In this case you would have halved the search area, thus enabling a more concentrated SAR effort, able to locate and rescue you quicker.

An Emergency Locator Beacon (ELB) in your aircraft will further enhance your survival chances. These beacons all transmit on 121.5MHz and this frequency is monitored by most high flying aircraft. Already, several crews of Australian fishing boats that came to grief have been quickly saved following an aircraft report of ELB signals and position. Once an ELB signal is reported search action can commence immediately **in the correct area**. The beacons are designed to be activated either automatically on impact or manually by a switch in the unit itself. An inexpensive option is to also have a remote switch that will enable activation from the cockpit. Readers will recall the article by Jim Hanigan in the last *Digest*.

Search and Rescue satellites are able to pick up some ELB signals and through a Local User Terminal (LUT) find the position. It should be noted that not all ELBs are able to be satisfactorily operated. Instructions for the correct use of an ELB are included in the **Emergency Procedures Section** in the back of the Enroute Supplement into the aircraft; have a look at them right now, for they may be difficult to read while you're floating around.

Always be aware of the environment you are flying over. While most pilots take special precautions when flying through a remote area, even a one-hour scenic flight from your capital city aerodrome can take you over some unforgiving terrain. Consider the need to take water or warm clothing.

If you make careful, sensible SAR contingency plans, you will maximise the opportunity of successful Search and Rescue following an occurrence that in any aircraft at any time or place is always a **chance**, however **remote**!

Accident response

One helicopter — two deaths
One helicopter — two deaths
One helicopter — two very lucky

On **May 20, 1989, a Hughes 369HS**, departed Koroit Airport, near Warrnambool, Victoria, after flying for about an hour and a half in transit from San Remo.

As the aircraft lifted off, the rear door opened and flapped in the slipstream. The pilot flew on for approximately 100m at a height of one metre, landed, disembarked and closed the door.

Having again become airborne, the helicopter flew directly to the coast, where witnesses saw it positioning at the cliff face as if for photography. The weather was fine and the wind light.

In a descent through an estimated 200 ft, directly above the rocks at a slow forward speed, the aircraft was seen to commence an unbanked turn to the right. The rate of turn rapidly accelerated and the engine noise increased. Several witnesses — the helicopter was over a well-known rock feature — then saw the aft section of the tail boom (tail rotor assembly and stabilisers) fall free.

The aircraft adopted a steep nose-down attitude and after an estimated six complete rotations rotated and plummeted out of sight over the edge of the cliff. As it disappeared, pieces were seen falling away.

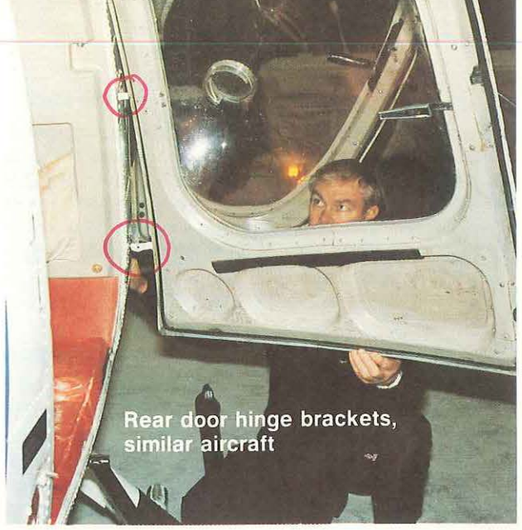
A witness immediately — and bravely — descended to the beach and swam in surging seas to the wreck, which was lying on its side. The two occupants were still strapped in; post mortems indicated instant death.

With the help of emergency services, the hull and some other parts of the helicopter were soon salvaged.

Investigators found:

- three rotor strikes on the cliff face some 65 ft below the lip, tearing off two blades
- rotor blade strike on the left rear fuselage
- massive damage to the air intake area, engine structure and rear fuselage, all from rotor impact

Of the four doors, only a small portion of the left rear plus its hinge assemblies were recovered. The left rear lower hinge pin was not found, nor was any remnant of the lower hinge bracket. It was considered unlikely that the hinge pin came out during the accident unless it had been inserted improperly. The only alternative is that the pin was missing.

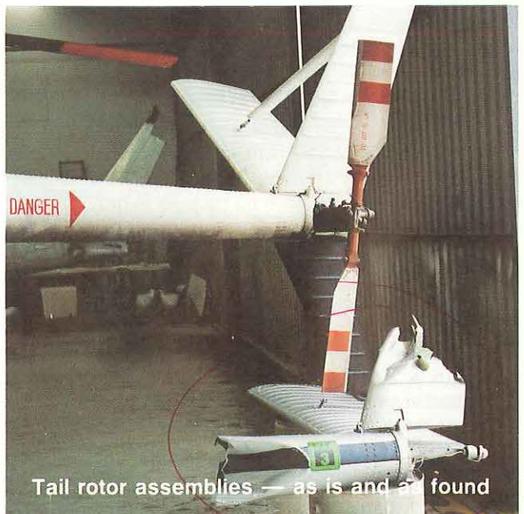


Rear door hinge brackets, similar aircraft

Further investigation revealed no structural damage around the pin area, although the upper hinge bracket on that door had failed through overload, consistent with the door having been thrust upwards about the upper hinge without restraint from the lower hinge, this all happening while the door was in the 'open' position.

The tail rotor blades showed evidence of having sustained impact damage in flight, and the only part of the door frame recovered displayed a dent as if it had been hit by a rotor blade. Concomitant with this was an indentation in the leading edge of one of the tail rotor blades. As witness reports included the sighting of discrete tail rotor blades (normally they are merely a blur to the eyes) it is considered that tail rotor RPM had slowed considerably.

As a result of this and other evidence, it was concluded that the left rear door came off during a low speed descent, struck the main rotor blades and broke up. Pieces then impacted the tail rotor, virtually reducing RPM to zero. The consequent lack of correcting torque put the aircraft into a violent right hand spin, from which no recovery was possible.



Tail rotor assemblies — as is and as found

Evidence to support this thesis again comes directly from eye-witnesses, who reported hearing 'increases in engine noise'. This is consistent with an increase in main rotor RPM following removal of the load required to drive the tail rotor. Once the tail rotor assembly had broken up, C of G would have been well outside the authority of the fore and aft cyclic controls and therefore beyond the ability of the pilot to recover.

Subsequent experiments with this type of aircraft revealed that the rear doors could be slammed shut, even without a lower hinge pin, resulting in a slightly askew positioning and a distinct possibility that a door could open in flight.

The coronial verdict recorded the probability that the lower hinge pin in the rear lower door had not been inserted properly, or was missing during the flight.

It was suggested that, given the high use of this sort of aircraft for filming purposes and the routine requirement for a door to be removed for better pictures, it is of paramount importance for a helicopter pilot to ensure that when the doors are in fact in place, the hinge pins should not only be present, but be fitted correctly.

Just after take-off, a **Robinson R22M** had achieved approximately 60 kt/300 ft when witnesses heard a sharp crack. All engine and rotor noise ceased and the aircraft descended at a steep angle until impact with the ground. A fierce post impact fire consumed the cockpit area. Both occupants of the aircraft were killed.

Initial investigation determined that one main rotor blade had separated in flight, and a possible fatigue failure was detected in the root area of the blade, where the blade spar attaches to the root fitting. This probable fatigue cracking had progressed across 70% of the fitting, but was invisible to normal inspection because the root area is completely enclosed by an external blade skin.

Of vital interest in this fatal accident is time. Time, that is, that the rotor blades were actually in service on the aircraft. The aircraft logbook recorded 1 553 hours, but examination of the pilots' logbooks/diaries revealed to the BASI investigator that 2 257.2 hours was probably much more accurate.

Microscopic inspection by the CAA Metals Evaluation Laboratory backs up the latter figure. All this should be seen in the light of current legislation, which requires replacement of the blades after 2 000 hours service.

Even more interesting is the metallurgist's conclusion, based on careful examination of cracks and striations in the blade, that the initial tiny fracture occurred some 1100 start-ups before failure.

The (two) blades on the aircraft were of the same age. Why did one intially crack? Well, apart from the ever-present possibility of a tiny manufacturing defect, helicopter main rotor blades are subject to many exotic stresses, not the least being 'blade-sailing' as a result of start up in high or gusty wind conditions, or even pilot handling (the input of sudden or excessive control movements). If something like this happened at just the wrong time, one blade only indeed could have been affected.

BASI has recommended that the CAA:

- review the retirement time for Robinson R22 main rotor blades, using information based on the true service time of the failed blade
- develop and implement an inspection technique for the main rotor blades to detect progressive fatigue failure in the area of the rib root fitting.

Interim comments from CAA Continuing Airworthiness Branch include:

- the introduction of a review of blade life time
- description of work currently in progress to develop an inspection technique of rotor blades from outside the blade skin covering.
- notation that an Airworthiness Directive was issued on 1/6/90 requiring close visual inspection of that type of blade, and imposing an interim reduced life limitation.

This means that all owners have been informed of the situation. In addition, the manufacturer and airworthiness authorities world-wide have been alerted to the accident and the problem.

In the light of the evidence that the initial tiny stress crack may well have started at 2 257.2 hours minus a time represented by some 1100 start-ups, the CAA is giving consideration to reducing the life of that model of main rotor blade.

The saddest sight of all

Robinson R22, November, 1990.

Crew: instructor plus student

Exercise: dual to solo

During a normal training session, the aircraft was approaching base position in the circuit.

Previously, the student had been slow in entering autorotation following a practice engine failure, and this had some bearing on subsequent events. The instructor initiated a PFL and again the student was sluggish in lowering the collective and trimming the aircraft (in the R22, rotor RPM decays rapidly unless the collective is smartly lowered). To mitigate this, the instructor then took over and lowered the collective 'faster' than the normal rate.

The helicopter commenced an uncontrollable yaw/roll to the left — almost a flick manoeuvre. During this, lateral rock of the mast occurred. The aircraft lost some 500-600 ft, and it is the instructor's opinion that they became inverted at some stage. Control input was virtually ineffective until the helicopter rolled out 90° nose-down and was recovered at a high forward speed.

After an immediate landing, inspection revealed mast bump damage and oil from the engine breather on the underside of the main rotor, tail boom and tail rotor.

It is of interest that in 1982 Robinson put out a Safety Notice entitled 'Abrupt pull-ups and push-overs can be catastrophic' The Notice followed a fatal accident, wherein a student put the aircraft into a low-G (weightless) flight condition, whilst attempting to manoeuvre the aircraft with full cyclic inputs. Rotor-flapping occurred, exceeding design limitations and causing extreme mast-bumping which fractured the main rotor shaft.

Fortunately the incident in Australia was not cataclysmic, but the lesson stands out clearly. As Robinson say in the Notice,

'Caution

In forward flight, when a pull-up (aft cyclic) is followed by a push-over (forward cyclic), a weightless (low-G) condition will occur. If the aircraft starts to roll during this condition, gently apply aft cyclic to reduce the weightless feeling before using lateral cyclic to stop the roll.'

Light helicopters, for their cyclic control, depend primarily upon tilting the main rotor thrust to produce control moments about the C of G, in order to roll or pitch the aircraft in the desired direction. In forward flight, when a pull-up is followed by a pushover, the angle of attack and thrust of the rotor is reduced, causing a low-G or even weightless flight condition. During the low-G condition, the lateral cyclic has little, if any, effect because the rotor thrust has been reduced. Also, there is no main rotor thrust component to the left to counteract the tail rotor thrust to the right and, since the tail rotor is above the C of G, it will cause the aircraft to roll rapidly to the right. Should the pilot attempt to halt this roll by the application of full left cyclic **before** regaining main rotor thrust, the rotor can exceed its flapping limits and cause structural failure of the rotor shaft.

The best way to prevent mast bumping is to avoid abrupt cyclic pull-ups or push-overs during forward flight. Always use gentle and sensitive cyclic control inputs and, should you get the feeling of weightlessness during a manoeuvre, gently bring the cyclic aft to regain rotor thrust **before** lateral cyclic is applied.

More particularly, for entry into autorotation, first lower the collective, **then** close the throttle. For P (or R)FL, the prime requirement is to get that lever down quickly. Faster than quickly is even better. Of course, during all this and in the subsequent manoeuvring, continued safety depends largely upon maintaining rotor RPM and airspeed within the specified limits.

Scudrunnin' or Plane-rain-terrain-pain

Mark Perrett, Examiner of Airmen, Vic/Tas Field office

EVERY YEAR, somewhere in Oz, someone brings this epigram to its unfortunate conclusion. It's a subject that generates a lot of heat, a little light and some useful thoughts from those who should 'think it through' before they make their pronouncements.

Despite, or perhaps because of, widely varying meteorological. characteristics across the country, this sort of accident can and does happen in every State. All that is needed is poor weather, with moderate showers out of low stream cloud. Add a bit of adverse terrain — say hills with alluring gaps between the peaks — and Bingo! you'll find an aircraft, piloted VFR by someone for whom, today at least, discretion is not the better part of valour.

To quote the late professor: why is this so?

Let's look at a list, not necessarily conclusive, of the possible contributing factors:

- pilots involved are generally low time, low experience
- they exhibit an overwhelming desire to press on *('gethomeitis')*
- they feel (note 'feel', not necessarily 'are') subject to peer pressure, particularly when there are passengers involved
- they are flying relatively high performance aircraft, and are not used to thinking in terms of performance, ie rate of closure, complexity of operation, radius of turn etc.
- they do not know or wish to operate in the precautionary search configuration for that type of aircraft, ie the configuration best suited for manoeuvring in bad weather
- they do not plan, particularly when weather becomes a factor, to minimise the effects of terrain on their route
- they do not know, or conform to, the VFR
- they have no contingency plan ('escape route')
- they have little or no exposure to low-level operations under low cloud bases
- they have had little or no supervision from flying organisations in respect of
  - — an over-quick upgrade to a complex aircraft type
  - — demanding navigation systems
  - — 'on the day' weather complications
- they have little or no practical experience or continuation training in precautionary search and landing procedures.

(how many pilots do you know who regularly practice forced landings, or precautionary circuits to touchdown on unfamiliar fields?).

I can hear muted murmurings of 'So what are you trying to say?', and the answer is simple: if you fit one or more of the descriptions above, you're a candidate for an accident!

'OK', you say, 'what can I do, what can we do, about it?'

Answer: Examine each of the statements and come up with the best solution — and not just 'I'll have a little lie-down until the feeling passes' — what we're about here is maximising our chances of survival when we enter a very hostile environment.

Again, I can hear whispers about those poor sods who get into that situation, or even merely get into cloud, non-rated and untrained. And those voices go on to mention IF training for PPLs, radar assistance to those who ask and even a rating for cloud penetration to achieve VMC on top.

The permutations and combinations seem endless, but I reckon the answer is simple:

- know precisely what VMC look like and be prepared to fly right to the limits — but no further
- be the master of your own fate, decide off your own bat, but be sure to do it in time
- organise your route to give the best margins, consider your escape plan(s) and then act in accordance with your pre-flight preparation, always remembering 'WHEN IN DOUBT, BUG OUT!'
- know yourself and your capabilities, get to know your aircraft and what it can do at your hands; do not overextend yourself
- self-confidence should be your goal — it's those twin villains, underconfidence (= badly-trained) and overconfidence (= badly-trained) that result in pilot-associated accidents
- Finally, remember the well-worn saying, 'If you're in no rush to get there, fly yourself!'

Prank ends in tragedy

AIR SAFETY investigators believe two experienced Victorian pilots died in outback NSW when a flour-bombing exercise went tragically wrong at an isolated airstrip.

Geoff Clarke, 32, from Shepparton, and Ashley Smith, from Pyramid Hill, died when the Piper Cherokee they had hired for a weekend excursion clipped the top of an old courthouse at Milparinka, 300km north of Broken Hill.

It cartwheeled into the ground and exploded in flames, also killing Samantha Loophole, 19, a jillaroo from South Australia who had been taken up for a joy flight.

Kids at the scene

Mr Clarke's three children, aged eight, five and three, and his wife, Marcy, were at Milparinka when the plane exploded on Sunday afternoon.

They ran towards the flaming wreckage but nothing could be done.

Acting Sgt Ron Harrison, of Shepparton police, said the plane hit the courthouse after the flour-bombing run.

'They were flour-bombing from the plane. The left wing clipped the courthouse and it's gone in.' he said.

Mr Smith's father, Graham, said yesterday his son was the oldest of five and his younger brothers and sisters were taking his death 'very hard'.

'He only started flying in November last year and it was all he ever wanted to do, to eventually become a commercial pilot and fly for an airline.' he said

'He was a real big brother to all the other children, and only had fifteen hours' flight time to go to get his full commercial licence.

'Only last Monday, he completed his night rating after becoming a full-time flying student.'

'The bug had really got him.'

Mr Clarke was also an experienced pilot despite not having his full licence.

Thanks to the Herald-Sun for permission to reprint this article of 13/11/90.

FLYING is not ✈✈✈
a TRIVIAL PURSUIT ✈✈✈

AIRFLOW

Feeling a little query?

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

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

Write to: AIRFLOW
Aviation Safety Digest
G.P.O. Box 367
CANBERRA A.C.T. 2601
Australia

Quiz Quiz Quiz

Q1
If during a VFR flight you had to make a forced landing, would the initial search effort be concentrated within:
(a) 5 nm;
(b) 10 nm; or
(c) 50 nm
of your last reported track?
(A Hargreaves, SOC/SARMC Adelaide)

Q2
What pre-circuit area reports or broadcasts are required by the pilot of an aircraft on descent from 5 000 ft or above to an aerodrome within an AFIZ with the intention of making a landing?
(a) 20 nm inbound;
(b) 15 nm from AFIZ boundary;
(c) 15 nm from AFIZ boundary if passed 5 000 ft; or
(d) no calls required before joining.
(Mark Nugent, Brisbane Flight Service)

Q3
Are the following statements concerning balloon flights true or false?
(a) PVT may fly within controlled airspace;
(b) AWK/CHTR may fly within controlled airspace;
(c) AWK/CHTR must give way to powered aircraft landing or on final by climbing, descending or delaying launch;
(d) within 3 nm of an aerodrome minimum altitude is 1 500 ft; and
(e) except to launch or land, minimum altitude over populous
areas, towns, cities or any object thereon is 2000 ft.
(Fred McLean, Brisbane Flight Service)

Q4
Concerning aircraft external lighting:
(a) where may be found the specifications for anti-collision and navigation lights?
(b) what is the correct procedure following failure of a specified light?
(c) may flashing navigation lights be fitted to Australian aircraft?
(TR Watson, Sectional Airworthiness Surveyor)

Q5
At what distance from the destination airfield may an aircraft under IFR flight procedures by night be issued with the clearance 'Make visual approach'?

Q6
I am flying a single engined aeroplane, with a MTOW greater than 1 930 kg, VFR by day from Moorabbin to Broken Hill (BHI). The TAF for BHI is as follows:
TAF AMD BHI 1908 20015KT 9999 50DZ 6ST008
GRADU 0002 9999 5SC025
INTER 0206 50DZ 6ST008
10 11 16 18 1008 1007 1006 1004
(a) Does the forecast require nomination of an alternate if my planned ETA is 0035 UTC?
(b) If I can't carry enough fuel for a diversion aerodrome, or for holding, what is the earliest time I can plan to arrive?
(c) What is the latest time I can plan to arrive without having to obtain a later TAF?
(d) What is the forecast QNH for an arrival time of 0100 UTC?
(Chris Mirow EofA GA, SA/NT)

A1
(b) It's just as well to remember, particularly flying outback, that there are many reasons for good track-keeping.
Pilot reference: VFG-1-1(c); ATC ref: AOI-4 SCH 2-2.1.5.1

A2
(b) irrespective of aircraft altitude.
AIP RAC/OPS-0-85-10; VFG 63-3 and 6

A3
(a) False, unless previously approved in writing by the relevant CAA Field Office.
(b) True, subject to issue of clearance
(c) True
(d) False; 2 000 ft is minimum
(e) False; 1 000 ft is the correct figure.
RAC/OPS-1-50A.13.1.2 and 3

A4
(a) CAR 196
(b) CAR 195: (4) In the event of the failure of any light which is required by the rules of this Part to be displayed by an aircraft in flight, the aircraft concerned shall, if the light cannot immediately be repaired, notify Air Traffic Control immediately or, if this is not possible, land as soon as it can do so without danger.
(c) CAR 196: (2) Unless the Authority otherwise directs, navigation lights shall be steady lights

A5
(a) 5 nm if the pilot has the airfield in sight;
(b) 10 nm by the use of the phrase 'From 5 nm make visual approach'; and, if being radar vectored:
(i) issued with a heading enabling a visual approach to be carried out from 5 nm; or
(ii) assigned the minimum radar terrain clearance altitude and issued with heading instructions for final approach, by use of the phrase 'When established on the VASIS, make visual approach'
[AIP RAC/OPS 1.93.1.4.1.2 (b), (c), (d)].

A6
(a) Yes; the forecast cloud of 6/8 stratus at 800 ft is valid until after 0200 UTC.
(VFG 42.12,42.13)
(b) 0630 UTC.
(VFG 42.12)
(c) 0700 UTC.
(VFG 40.1)
(d) 1006 hPa.
(VFG 40.19)

More questions on AMATS:

Will I have to carry a transponder in my aircraft?

Only gliders, antique aircraft, balloons, aircraft without an engine-driven electrical system, and aircraft undertaking circuit training at GAAP aerodromes, will be exempted from the proposed requirement for carriage of transponders.

Approval will however be available for travel flights by aircraft not carrying transponders. This will be limited to three flights a year, and then only for the purpose of essential maintenance. Other conditions (weather etc) may be imposed on such flights.

How about cruising levels?

Compliance with ICAO Table of Cruising Levels, both above and below 5 000 ft, is now mandatory unless precluded by terrain or weather.

What SAR provisions will exist in Classes F and G airspace?

VFR operations in Class F and all operations in Class G airspace will receive a comprehensive Sartime service on request. For example, on multi-leg flights there could be a Sartime for arrival and departure at the end of each leg, whereby the pilot may nominate an ETD for SAR purposes as part of the arrival call.

IFR aircraft in Class F airspace will be on full reporting and will receive exactly the same type of Sarwatch as is available to them today

Communications will be maintained at the present standard, so that they may be made at any time. In addition, position reporting will be accessible to all flights, and although not compulsory, we expect that instructors will instil this as a good habit in their students.

If there is to be no traffic advice or directed operational information in Class G airspace, how will safety be maintained?

From a traffic information perspective, aircraft safety will be maintained by pilots exchanging information about their movements over common traffic frequencies. Where previously this data was first passed to Flight Service, who then relayed it to other pilots for conflict resolution, traffic information and separation will now be handled by direct pilot to pilot communications. Common traffic frequencies (normally FIS) will be used for 'self help' traffic information. En-route aircraft will remain tuned to these frequencies for operational information, emergency calls and cancellation of Sarwatch.

Operational information will be accessible on request at all times simply by contacting the Flight Information Service (FIS). For example, should you require an update on the weather at your destination, the information will be available in exactly the same way as it is today.

The proposed operations in Class G airspace are very similar to those that the Canadians, adhering to ICAO recommendations, have been safely and successfully using for the past few decades. Australian pilots will not be guinea pigs for untested standards.

Remember, Class G airspace will not be implemented in busy traffic areas.

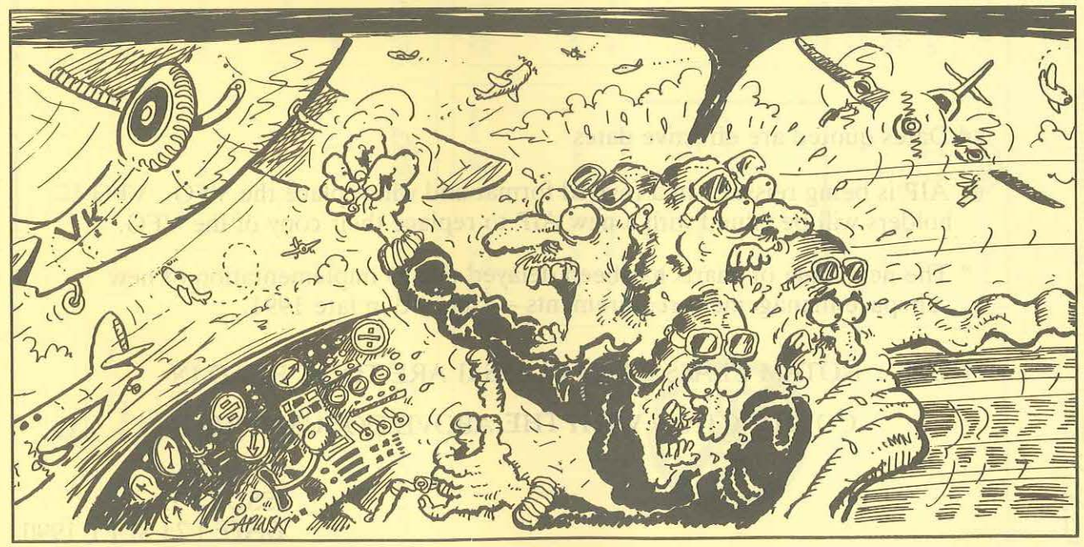
When will I have to carry and use a radio?

We have changed the proposal on this issue in order to retain the present mandatory requirement for carriage and use of radio above 5 000 ft in all airspace. VFR aircraft will be required to respond to transmissions from another aircraft if it is believed that conflict exists. Industry has also put forward a strong case to require all aircraft to communicate when in the vicinity of a licensed aerodrome. It is intended to prepare and distribute an ARP which will make future carriage and use of radio in the vicinity of these aerodromes mandatory. VFR non-commercial aircraft would be able to use hand-held radios.

A second ARP will propose that gliders monitor the traffic frequency appropriate to their area of operation. This does not imply position reporting or flight planning requirements for gliders.

Have the boundaries for the various classes of airspace been decided?

No. The published boundaries for the classes of airspace are not final, and may be altered to suit industry requirements.



AERONAUTICAL INFORMATION SERVICE AUSTRALIA

NOTICE

CURRENT DOCUMENTATION AND PLANNED NEXT ISSUE

Document	Current Issue #	Planned Next Issue #
DAP(E)	7-3-91	2-5-91
DAP(W)	4-4-91	30-5-91
INTERNATIONAL AGA 0 - 1 - 2	31-5-90	TBA
AIP (book)	13-12-90	2-5-91
VFG (book)	13-12-90	@
AIP/MAP	13-12-90	*
VFG/MAP	13-12-90	*
DAH	13-12-90	*
ERSA	7-3-91	30-5-91

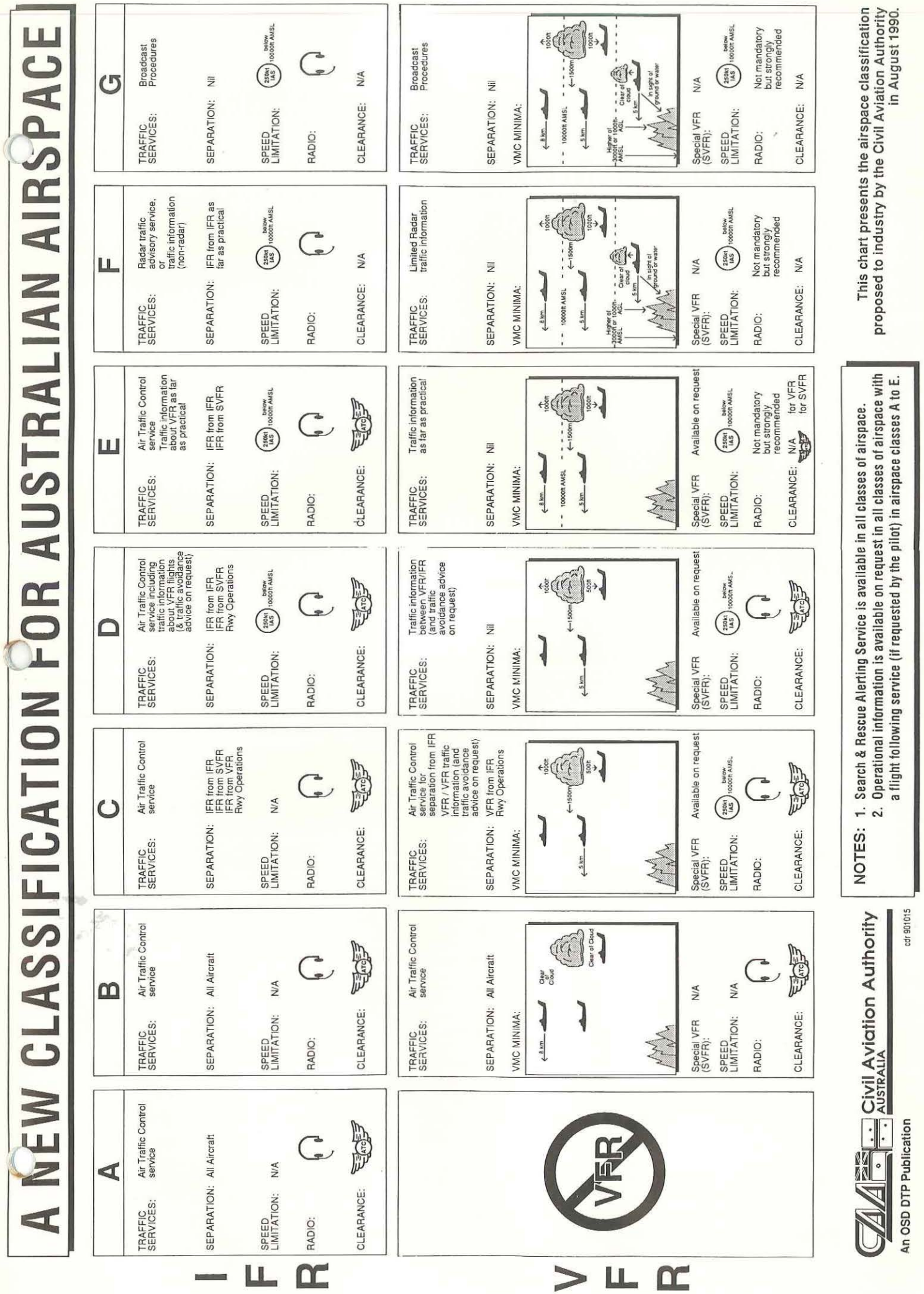
Dates quoted are effective dates

@ AIP is being reissued in a revised format and will replace the VFG. VFG holders will be issued with a new AIP to replace their copy of the VFG.

* The next issue of charts has been delayed due to implementation of new airspace management requirements - expected in late 1991.

NOTE : NOTAM CLASS I AND CLASS II ARE TO BE READ IN CONJUNCTION WITH THE ABOVE DOCUMENTS

ISSUE : 12
DATE : 23 SEPT 1990



This chart presents the airspace classification proposed to industry by the Civil Aviation Authority in August 1990.

NOTES: 1. Search & Rescue Alerting Service is available in all classes of airspace.
2. Operational information is available on request in all classes of airspace with a flight following service (if requested by the pilot) in airspace classes A to E.

Civil Aviation Authority AUSTRALIA

An OSD DTP Publication

cdf 901015

Airmanship — what will AMATS demand of you?

Mark Perrett, EofA (GA)

ENOUGH has been said of AMATS to conjure up a reasonably detailed picture in your minds of the proposed system. Early mention of AMATS generated more heat than light, but with awareness and rationalization comes illumination. Our task in this article is to see if your 'picture' has the right details and to try to interpret these details correctly. Whereas already we are called upon to use airmanship continuously, AMATS, particularly in the early stages, will demand an even higher standard of inflight judgement. We all will be feeling our way, and as always, the quick learners will carry those who are, for any reason, not so quick to assimilate the changes.

Before we get on to the specifics, let's define **Airmanship**. It often has been tried before, but undaunted, we'll have another go. First, **Airmanship** and **Commonsense** are the two most misused and abused terms in aviation. Too many people too often have sheltered behind them rather than face the embarrassing truth in analysing mishaps and misdemeanours. How often have we heard the statement 'No need to read up on that, it's just common sense!' or, 'He should have known better it's good airmanship'.... remember the adage: a superior pilot is one who uses his superior skills to avoid getting into situations which would require using his superior skills to get out of them?

For example:

Question. Is this **Airmanship**?...on finals for landing you drop your cigarette in your lap but have the strength of character to continue with the landing rather than groping to retrieve the butt.

Answer. NO! this is merely a glowing testimonial to stupidity! Good airmanship, in my book, is discarding the idea (smoking in flight) and thus the complication (600° centigrade burning into that lovely skin), well before it can become a hazard. Like the boy scouts, if we are prepared, and we have considered all eventualities, excluding what risks we can, then we can cope with most variations when they occur.

How will these considerations help us cope with AMATS? We should be aware the CAA has changed its philosophy on regulation. Rather than listing a whole series of directions, CARs now will state some prohibitions but leave it up to the pilot or operator to determine the means of compliance. A typical topical example is the Civil Aviation Advisory Publication — specifically CAAP No 235-1(1), which is the legal obligation of CAR 235 (4), (5), (6), and (7). Well, AMATS has also freed up the means by which pilots may operate in certain sectors of airspace, and by introducing some rule changes as well as predicting others. The combined effects of these two changed areas place much more of the initiative on us pilots. We have to reach out and grasp information which previously was propelled in our direction (sometimes whether we needed it or not). More emphasis now will fall on active self-briefing; pilots have a greater responsibility to be prepared. And that leads to another problem — sorting out the wheat from the chaff.

So, what do the letters A, B, C, D, E, F and G really mean to the pilot community? — apart from constituting 26.9% of the alphabet? One important fact to remember is that VFR and IFR operations will receive significantly different levels of service within controlled airspace, and because expertise varies widely from newly qualified private pilots to high-hour commercial pilots, understanding the other pilot's capabilities and point of view assumes great importance.

Having spoken in general terms thus far, we should examine more of the specific considerations, and discuss how airmanship may help to ease the pain.

Communications

A number of pilots will take advantage of the use of radio to tell people where they are. Remember, Air Traffic Service will no longer necessarily keep SARWATCH on your operation (based on failure to report), although response to emergency calls and signals will continue.

Ground Proximity

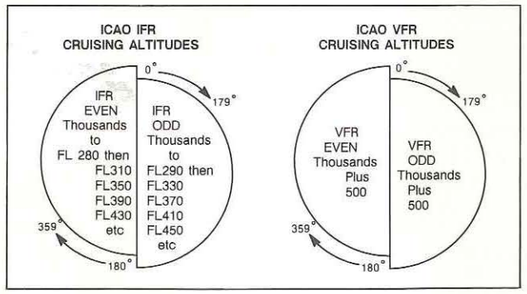
Another proposal under consideration is to amend CAR 157 to permit flight at 1 000 ft over a built-up area, and zero feet over unpopulated areas. Before committing themselves, pilots must ask what rules limit VFR operations to a cloud base no closer than 1 000 ft to ground. Relaxing CAR 157 may provide the temptation to operate closer to the ground below cloud much lower than 1 000 ft AGL. Just remember this: people who regularly operate close to the ground only do so after stringent and extensive training in low level operations. Even then, they are not accident-free.

Proximity to other aircraft

A further proposal is to relax CAR 163 to allow aircraft to operate closer to other aircraft than the current standards of 500 ft vertically and 600 m horizontally. Not many pilots receive training in judging distance from other aircraft, or in judging when a collision hazard exists. Simply, if an aircraft you sight remains in exactly the same relative position in windscreen or window, and grows larger in perceived size, you are on a collision course — do something to avoid him *[see the article in this edition on see and avoid — ed]*.

ICAO table of cruising levels

The new proposal is for IFR aircraft to operate at exact thousands (East-ODD, West-EVEN), while VFR aircraft operate at the exact 500s between them. We currently have a VFR/IFR mix at the same levels, same way, and so on. Perhaps the most significant consideration is that it is a change, and that in some airspace categories, un-notified (ie, not known to ATS, and indeed possibly making no calls of any sort) VFR traffic may operate between IFR layers.



Flight planning

AMATS proposes a much simplified flight plan form, that submits to Air Traffic Services the minimum information necessary. Recent AIP amendments indicate how few items are required. Flight plan forms, however, contain space where the thinking pilot can analyse fully LSALT, navigation and fuel planning requirements, as well as conduct a flight log. Space will be provided on the back of the new form for this function. We have had more than enough 'lost', 'strayed' or fuel exhaustion accidents — now is the time to encourage your friends to be prepared.

Where do we stand?

It is not my deliberate intention to play the Devil's Advocate in these matters; when AMATS arrives we will all have to live with changed circumstances until conforming to the new requirements becomes second nature, and the more we understand and are able to apply, the smoother will be the conversion and the fewer the hazards. I have not attempted to raise all the pertinent points of contention, nor describe them, nor further yet, provide all the answers. Far better all round that articles like these generate discussion and consideration; this will lead ultimately to a complete understanding. However, I will indulge myself in a few motherhood (should that be 'parenthood'?) statements, for which I believe the time is ripe:

Proficiency and survivability in flight are becoming, more than ever, the responsibility of the individual pilot. It's a big world out there and sometimes we just do not realise the loneliness of it all. Your average American or European pilot would have the utmost difficulty in assimilating what we take for granted; that is, all too often even now we are on our lonesome, without airfields, radar, or navaids within spitting distance, and certainly with no traffic information. For many of us, the loneliness will increase, as the only transmissions we will hear will be from pilots in similar situations. This is where 'see and avoid' is so important — the first must happen before the other is achievable. Actually, I prefer 'see and be seen!' Do everything you can to be seen — use radio (listen as well as talk), use lights, use notification. Pilots should be seen and heard.

Accidents as a result of poor airmanship continue to happen and no doubt always will. You name it — manoeuvring too close to the ground; continuing, when VFR, into deteriorating weather; mid-airs; fuel exhaustion — all happening in a medium and system we purport to understand. Now the rules and conditions are about to change; not much, but enough. It is up to us not to allow this new variable to become a link in the accident chain. Aviation, I have heard said, is not inherently dangerous, but is terribly unforgiving of ignorance, incompetence or error.

Perhaps the changes will encourage us all to hone our technique, reassess our operation and reinforce the self-reliance for which Australian pilots are renowned.

Field Office Forum

Amo, Amas, Amats

Geoff White, Air Traffic Services, Vic/Tas Field Office

AIRSPACE CHANGES of one sort or another have been lurking in the wings for the best part of ten years, but it's only in the last few months that a purposeful and clear proposal has been presented. This proposal is AMATS (Airspace Management and Air Traffic Services review).

For the last two years I have been involved with the Vic/Tas Regional Airspace Users Advisory Committee and Air Co-ordinating Sub-Committee. In both organisations it has been made quite clear that new philosophies exist regarding the approach to airspace utilisation and relevant procedures, and that these new philosophies are embraced by both civil and military aviation authorities.

The underlying thrust has been that if we cannot justify a particular class of airspace, for instance the 10 000 ft CTA lower limit between Adelaide and Melbourne, that airspace should be released for uncontrolled use. In this case the CTA lower limit was raised to FL200. Similarly if an FIA boundary can be changed to resolve a communications or traffic problem, we would do it as soon as possible. In this way ATS procedures have been modernised in order to expedite aircraft movement and to free up the airspace as much as possible.

AMATS continues that philosophy. It includes among other things:

- the use of visual separation between VFR aircraft;
- introduction of the ICAO table of cruising levels that will not only standardise levels within all Australian airspace and with our international neighbours, but will also provide a minimum 500 ft vertical separation between cruising IFR and VFR flights;
- approval for local operators in G class airspace to establish UNICOM type services on discrete VHF frequencies to cover local aerodrome operations;
- the level of services provided in the various classes of airspace will be relevant to the needs of the majority of users of that airspace.

AMATS will provide an air traffic system that is not only as safe as ever, but far more cost-efficient.

As part of our industry education process here in Victoria, we have initiated a number of seminars, as well as being invited to give talks on AMATS at various association and aero-club premises. The hospitality shown us on the latter occasions has been very warm and friendly.

The following is a list of commonly raised questions:

Q1. What qualifications will be required to allow people to provide weather information on UNICOM frequencies?

Answer: The provision and accuracy of any information on UNICOM frequencies will be the sole responsibility of the service provider. Persons or organisations wishing to operate on UNICOM frequencies will be required to obtain the appropriate licences from the Dep't of Transport and Communications.

Q2. Will a person operating in F and G airspace use Flight Service frequencies?

Answer: Yes.The FIA frequencies will be used to provide services in both Class F and G airspace.In Class F the frequencies will be used for traffic information, SAR Alerting and the provision of Flight Information Services. In Class G the frequencies will be used for the provision of Flight Information Services and SAR Alerting. Don't forget that traffic information in Class G is on a pilot-to-pilot, self-help basis.

Q3. How do you go IFR category/VFR procedures?

Answer: You don't. With the introduction of the AMATS proposals, the distinction between Flight Category and Flight Procedures will be discontinued. Flights will be classified either Instrument Flight Rules, or Visual Flight Rules.

Q4. Is AMATS going to happen on a fixed date?

Answer: Yes, and subject to industry agreement it is hoped to introduce Phase 1 in mid-June 1991 via a NOTAM Class 2. This would be followed in September by the chart amendments which would reflect the airspace changes. A further consultative process and industry agreement will be sought before any Phase 2 is ratified.

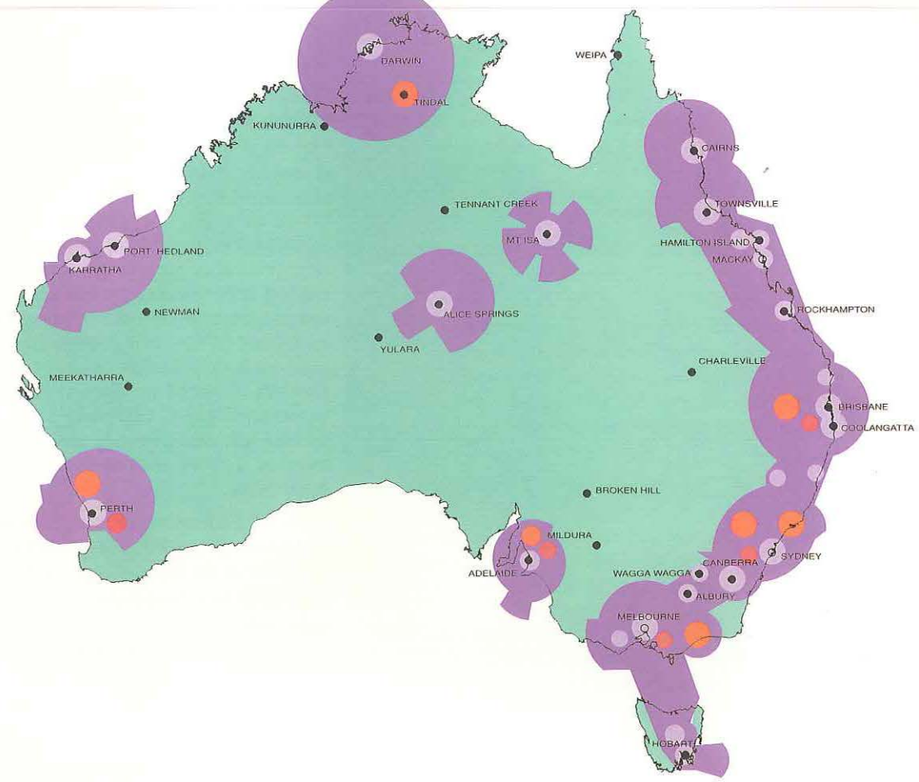
Q5. Is B050 still a valid level?

Answer: Yes. However, the rules applicable to the selection of levels, currently shown in AIP RAC/OPS-0-20, will still apply to VFR flights. Although not mandatory, wherever possible pilots of VFR flights are strongly urged to comply with the table when operating below 5 000 ft.

Q6. Will we be dealing with people locally?

Answer: Not in all cases. Under the Consolidation Programme we are, where, possible progressively bringing back our remote or tropical ATS units to appropriate major centres.

PHASE 1
Airspace Classifications A - D

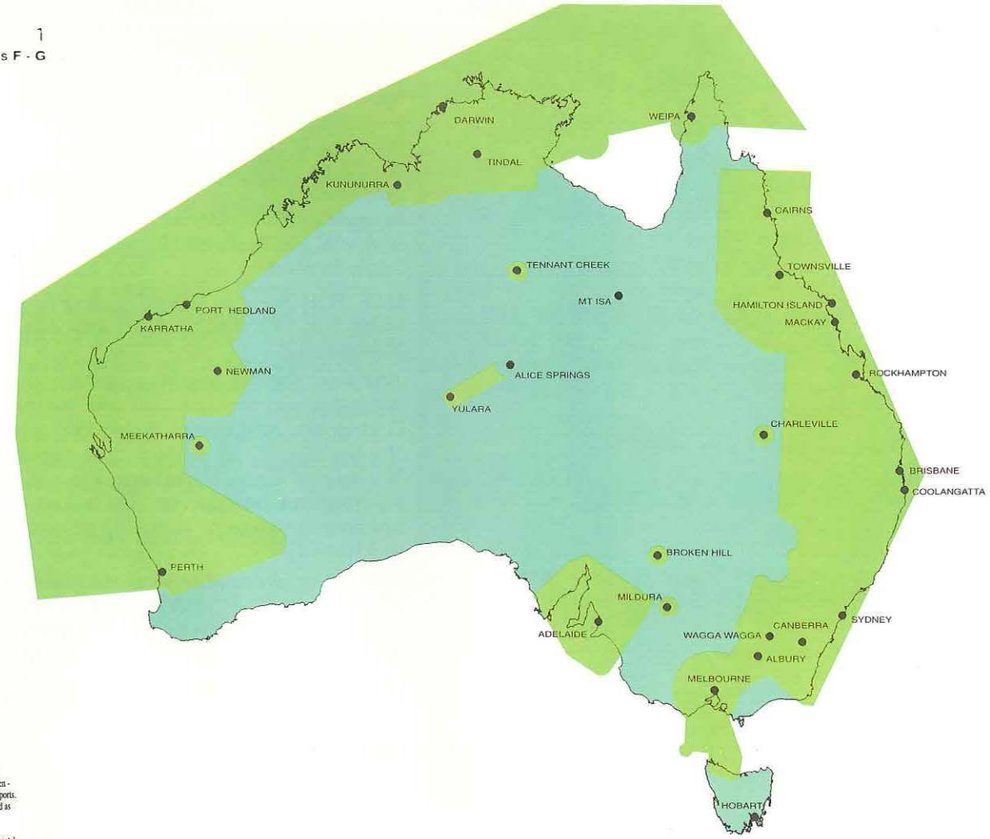


Legend

Airspace Classifications		Application
	Class A	Overall FL200 - FL600. (FL245 - FL460 Oceanic areas)
	Class B	10,000ft - FL200 over Class C aerodromes and along busy routes.
	Class C	All Primary Control Zone airports.
	Class D	GAAP airports.
		Military Airport

Note: Airspaces are indicative only and not to scale.

PHASE 1
Airspace Classifications F - G



Legend

Airspace Classifications		Application
	Class F	Radar traffic advisory or traffic information service area, either en - route or surrounding Class C airports. Additionally, AFIZ are classified as Class F airspace.
	Class G	Over the major portion of continental Australia and Oceanic areas where a higher level of service is not warranted.

Note: Airspaces are indicative only and not to scale.

Q7. Will pilots have to report arrival/departure?

Answer: Yes. For traffic reasons, broadcast and reporting procedures similar to those in use at the present time will continue. Additionally, reports will be required from aircraft wishing to cancel Sartime.

Q8. Will there be a readback requirement for instructions as well as for clearances?

Answer: Readback of specific clearance items will still be required, but in a simpler form that is under development. At this time we are still working on the procedures surrounding the new ATC instructions, but these will be clarified prior to the introduction of the new airspace.

Q9. Is the present rule for 50nm travel flights having to submit flight plans going to be abolished?

Answer: This rule was removed from AIP some time ago.It will only be necessary to submit a flight plan to ATS when entering airspace where prior notification is required for the provision of services, eg for clearances, traffic etc. Should you elect not to submit details to ATS, it is highly recommended that you leave them with some other responsible person.

Q10. Will the frequencies be overcrowded?

Answer: Frequency usage and congestion will be reviewed as implementation of the airspace progresses. Separate frequencies will normally be required for Flight Information Service (FIS) and traffic services, except when operating in Class F airspace where a traffic information service (as distinct from radar advisories) applies. Frequency allocation will be rationalised as necessary to minimise the number of frequencies, and therefore frequency changes, required.

Q11. Why have so many frequencies, eg FIS for Ops Info and SAR etc, and another for traffic? Seems too many to me.

Answer: I think our answer to Q10 covers this pretty well. It is probably worth adding that we anticipate that some FIS will be provided on traffic frequencies, subject to ATC workload and possible frequency congestion. Should these prove too high, the appropriate FIS frequency will have to be selected.

Q12. Will we still have AFIZs?

Answer: Yes and no! Where it is considered necessary to maintain a level of directed traffic information at aerodromes located within Class G airspace, the existing AFIZ dimensions and reporting procedures will still apply, although the traffic service will be limited to that provided in Class F, ie IFR to IFR only. Where what was an AFIZ lies within Class F airspace, that AFIZ will be absorbed into the surrounding F airspace so that there will be commonality in traffic service and pilot report/broadcast requirements.

Q13. Are the hemispherical levels from ground up?

Answer: Yes.(See answer to Q5.)

Q14. I hardly ever go into controlled airspace, so will I have to get a transponder fitted to my non-electric Tiger Moth?

Answer: Although the proposal recommends the mandatory carriage of transponders within 30nm of radar airports, obviously a blanket application would be unnecessary in all cases and probably unworkable in many. We are taking into consideration the long-established operators and owners who would fall into the category of the questioner, and anticipate being able to accommodate them to everyone's satisfaction. Of course, should the above pilot wish to enter Class C airspace around Melbourne, he would have to contact the Melbourne Area Manager or Tower Manager as appropriate, to gain approval.

Q15. If I have to get a transponder fitted for flights within 30 NM of Melbourne, will I also have to be radio equipped?

Answer: No. Ideally we would like to communicate with all aircraft operating in that airspace, but the transponder alone will enable better protection to be given to all users.

Q16. The Lane of Entry (LOE) between Moorabbin and West of Melbourne lies within 30 NM of Melbourne airport. If this becomes F advisory airspace, how do I get from my property near Latrobe Valley to my uncle's place at Ballarat (I don't have a transponder)?

Answer: At this stage we are not certain whether or not Lanes of Entry and their approach paths will be excluded from the transponder requirement. If they are excluded, then there would be no change to existing procedures. If they are NOT excluded, then there would be some sort of condition placed on movements. These conditions could be related to traffic, particular times of day, and so on, and will be finalised before Phase 1 is implemented.

Q17. Will Special Aerodrome Procedures still exist for VFR flights into and out of Essendon?

Answer: Special Aerodrome Procedures (SAP) were devised to facilitate and control VFR flights into and out of Essendon, recognising the peculiarity of Essendon airport lying within Melbourne airport airspace. We are still considering our position on SAP's and related procedures, and again, this will be completed prior to Phase 1.

I hope you were able to glean something out of all of those. The AMATS project designed specifically to improve the management of Australian Airspace, will probably have the most significant and far-reaching effects of any change to the aviation industry in Australia, de-regulation included. I am confident that as the new airspace unfolds the characteristics it presents will be found to be far more user-friendly than offered by the current model.

Flight information service

WITH AMATS IMMINENT, now is the time for all good pilots to understand the operational information which will be provided by FIS.

Primary Functions

- provision of pre-flight briefing services
- provision of flight information service (excluding traffic information)

Secondary Functions

- SAR alerting
- the recording of mandatory and voluntary position reports from aircraft operating in classes E, F and G airspace
- AIS functions

FIS will have facilities to obtain all significant current meteorological and aeronautical information to allow pilots to have access to the latest and most relevant data available.

Availability of Service

A Flight Information Service will be available to all aircraft in all classes of airspace ON REQUEST. This means that the the information will be made available as and when the pilot asks for it. FIS will be delivered either on traffic frequencies, or, pilots will be instructed to call on a discrete frequency and the information will be passed. FIS will be supplemented by ATIS broadcast information where this service is available.

A directed service may also be available.

Frequencies

FIS air/ground frequencies will be taken from the existing VHF/HF network.

Good airmanship will dictate that you, the pilot,will make the new system work to your maximum benefit. However, the old adage applies just as strongly as before: always check conditions at the destination aerodrome immediately prior latest divert time.

Don't worry about our feelings — we're used to it!

by 'Sandfire'

THIS IS A TRUE story, only the names and locations have been changed to protect the author!

Back in the mid '70s when I was an FSO, I was on a two year transfer at a DCA outstation (Carnarvon), north of Geraldton, WA. One of the local Post Office techs, I'll call him Vince, had a private licence and would charter a 172 or 182 every couple of months, to do a tour of the traps. This was to check up on their remote gear to see that batteries, guy wires, masts etc were all in good shape.

One trip had been to a place called Hamelin Pool, about an hour by Cessna south of Carnarvon. Anyway, it was getting late in the afternoon and Vince calls up on VHF

'... departed Hamelin Pool, on climb to 10 000, estimating Carnarvon in about 50 minutes'.

The 182 was only equipped with VHF and Vince was operating on a SARTIME due lack of HF, so he had reported departure on the Area VHF frequency as soon as he could.

About 10 minutes later, he calls me again:

'Er, Carnarvon, this is PMG'..

'PMG this is Carnarvon, go ahead',.

'Er Sandfire, is Charlie on duty at the moment?'...

'Standby' says I.

Charlie (*again a nom-de-plane*) was the local LAME. I put the receiver onto speaker watch and slid open the sash window which faced onto the apron. Poking my now unadorned head out the window I could see Charlie working on the prop of a Cherokee, and promptly relayed that to Vince.

'Er thanks', replied Vince, 'would you give him a call and tell him that I've got that rough running motor again, and I'll be making a forced landing back at Hamelin Pool!'

Later on, about last light, when Vince and Charlie and PMG and the relief aircraft all got back to Carnarvon, I took Vince aside. 'Bloody hell, Vince, why didn't you let me know straight off that you were in difficulty, we could have had things under way a lot sooner than we did?'

'I know' says Vince, 'but I didn't want to worry you!'

What to do if you're lost

(AMATS won't keep you on track, but it will make you think a bit more about your navigation)

John McQueen, EofA, NSW Field Office

THERE ARE NOT many pilots who have not been lost, or at least well and truly uncertain of their position. However, successful DR navigation does not require that you know exactly where you are at all times. Careful planning and a good knowledge of track and groundspeed should not only allow you to enjoy your flight but also always enable you to say roughly where you are, based on the time and direction from your last fix. To keep this system reliable, you should fix your position accurately about every half hour. The difference between being 'lost' and 'temporarily uncertain of your position' means that something has gone wrong in the technique and you are unable to fix yourself as planned. This need not be serious as long as you know the procedure to follow when this occurs — so let's go through it.

When are you lost?

It is important that you admit to yourself that you are lost before things get worse. Normally if you are unable to find your position within 15-20 mins of a planned fix and depending on the area you are in and the number of features available, you can say you are lost.

The causes of becoming lost

There is always a reason for becoming lost and it may be possible to discover what this is before pressing on. Common causes are :

- Incorrectly fixing last position
- Wrong information on the flight plan
- Misreading the flight plan
- Miscalculating the time for next ETA
- Not steering an accurate heading
- Gyrocompass not synchronised or faulty
- Magnetic Compass erroneous
- Major change in wind velocity
- Unplanned diversions

Initial actions after becoming lost

Before trying to determine the cause of becoming lost, there are some actions that you must consider immediately. The first one is whether to continue on your present heading, to orbit, or to backtrack. Only the pilot can decide which of these actions is best (any or all could be correct in different situations). **The worst thing that you can do however is to wander around aimlessly, trying to find a pinpoint**. This will make it difficult to retrace your flightpath and will take you away from your planned track should there be a quick and easy fix available.

The next consideration is to estimate how much fuel and daylight you have remaining. This is because both these limitations might be overlooked if you have to make decisions later under stress, and so should be firmly fixed in the brain at the outset. The engine should also be set for maximum range.

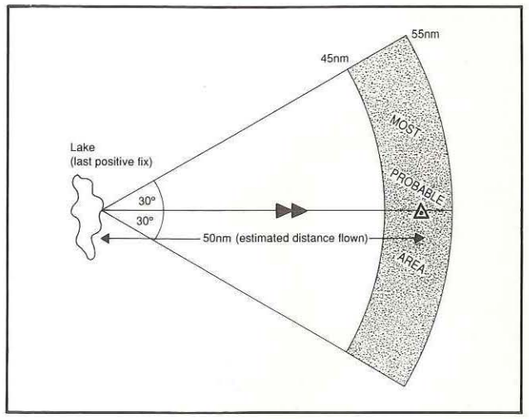
Lastly, **do not panic!** Remind yourself that if you follow a logical system, it's almost certain that you will re-establish your position.

Re-location procedures

Once you have assessed the overall situation, now is the time to do a quick trouble check if it is not immediately clear why you are lost.

- Decide what your last reliable fix was.
- Recheck the flight plan for any obvious errors.
- Ensure the gyrocompass is aligned with the magnetic compass.
- Look to see if the compass is not affected by anything like a camera, transistor radio or headphones.
- Estimate the track direction on the map and compare it with that on the flight plan.

The next step is to establish the most probable area you are in. Do this by estimating the distance flown since your last positive fix along your presumed track flown. Use this distance plus or minus 10% to draw two arcs between



30° either side of your presumed track, thus forming the most probable area you are in.

Now check features you can see on the ground against the area on the map and try to verify your position. Remember here it may be very tempting to jump to the wrong conclusions, so always work **from ground to map**.

If you are unsuccessful, you should now consider **climbing**. This will increase the range of both your vision and the radio aids. Tune into what you think the nearest radio aid is and try to get a bearing. It may be possible to obtain a reasonable fix using two bearings, or a bearing and a DME arc.

Whilst doing all this, try to keep your navigation log going. One feature on its own may not be enough, but two or more may give you the lead you need.

If you have not relocated yourself, by now you should consider:

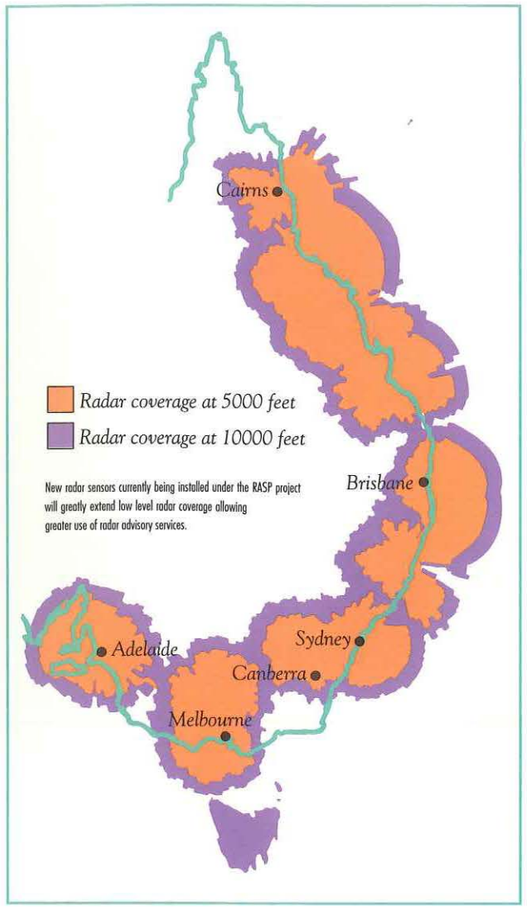
- Steering a reciprocal track to try to return to the last positive fix.
- Homing in to radio beacon if you have a good signal.
- Turning towards a known unmistakable feature like the coastline, a freeway or a river.

By now you should also be seriously thinking of HELP.

Help

Although self-help is now more important under the new procedures for AMATS, assistance is still available from a number of sources if you are lost. When you have decided you need some help, your first consideration should be whether you are in radar coverage. The diagram shows the planned radar coverage for Australia at 5000 ft and 10 000 ft for June 1991. If you are within this area, it should be a fairly easy task to obtain a position or a steer, for it is part of the advertised service. In any case, switch on your transponder to the emergency code of 7700 and talk to someone. I suggest that you first transfer to the Flight Information Service (FIS) and tell them that you require navigational assistance. Then, if you can, give them a quick situation report, ie your planned route, the last positive fix, your present heading and altitude, what radio aids you have, your endurance and roughly where you think you are. The operator, who will be trained for just this sort of situation, may ask you for more information, such as what the weather is or whether you can see any prominent features, etc. If the communication process is efficient, even without radar, they should soon be able to advise you of where you are or what to do. Remember though, it is only you that can make the final decision.

If you have no joy trying to contact FIS, there may be another aircraft able to assist you. Alternatively, you might try an overlying control traffic frequency shown on Planning Chart



A. Try international distress frequency of 121.5 MHz, which is guarded by many aircraft, including most airline and military traffic, some of which could be in your area.

This also is the time to switch on the ELB that you have either on your person or installed in the aircraft in such a way that it not only will fire in the event of a crash, but can be remotely activated by the pilot in flight. With the ELB transmitting, it obviously is not a good thing to continue in a straight line (the satellite will report multiple positions), so at this stage you will have decided upon your...

...Last Resort Action

If all else fails, particularly if you are short of fuel, apprehensive about the weather, or running out of daylight, do not leave it too late to land somewhere whilst you can. If you are faced with the prospect of finding somewhere to land, remember the five S's:

- **Surface, Slope, Shape, Size, Surrounds.**

Inspect the surface first, as carefully as circumstances allow, pick the longest, smoothest-looking run you can find and land into wind. From your training you will know all about how and when to vacate the aircraft in the event of a crash-landing, and when it would be safe to re-enter the fuselage.

Final advice

The main key to not getting lost is taking the time to select the best route for the flight. This is seldom the direct route, but normally a favourable route can be selected for just a few minutes extra flight time. This should:

- avoid unfriendly terrain
- make use of line features to follow
- have unmistakable turning points
- take advantage of radio aids
- exploit any definite means of finding the destination (highway, railway, river, juxtapositions etc).

Have an alternative plan of action should you be worried about weather or anything else that might affect your original intentions. Make time to put all the information on a flight plan using known or forecast winds, and then leave a copy of the plan with the CAA or some other agency or person you can trust.

Remember, when situations develop in the air, you just don't have much time to devote to the options. But, on the ground, one night's preparation may save you an eternity of regret.

Lookout — IFR in VMC

This article is reprinted from the Canadian 'Flight Comment' 1/1990 *and points up the sort of thing that Australian pilots need to be well aware of.*

note: in the Canadian structure, service provided in 'D' airspace is: Air Traffic Control; VFR not subject to control and not separated; traffic advisories when workload permits.

AN AVIATION occurrence investigated by both CF Flight Safety personnel and the Canadian Aviation Safety board concerned a near-miss between a military aircraft operating on an IFR clearance and a civilian aircraft practising holding procedures at a VOR on a VFR flight. The weather was VMC, with 15 NM visibility. The military aircraft had departed its nearby base, levelled at an assigned altitude of 5 000 ft on QNH and crossed the VOR in question enroute. The aircraft was transponder-equipped, had been identified on radar and was being monitored by the ATC Centre.

The civilian aircraft, piloted by an instructor and student, reported to the local control tower that it would be holding on the VOR at 5 000 on QNH, eight miles SE of the field (the airport control zone extends upwards to 3 500 above sea level). Although outside the tower's control zone, the civilian aircraft was monitoring tower frequency. It was also transponder-equipped and squawking, but was not picked up by the IFR controller in the En-route Centre.

The two aircraft passed on crossing tracks, near the VOR at the same altitude, with about 1 000 ft of lateral separation. Neither crew saw the other aircraft until the moment they were passing. No evasive action was taken by either aircraft.

The incident took place in 'D' airspace. This is controlled airspace within which both IFR and VFR flights are permitted. VFR do not require a clearance to enter. The En-route Centre had a responsibility for maintaining separation between the military aircraft and other known IFR traffic, but the controller did not have the civilian aircraft on his radar screen and consequently was unaware of its presence.

The civilian aircraft was practising holding patterns over an airways navigation fix, at an assignable IFR altitude. It would have been far more appropriate to hold at the VFR 500 ft offset altitude, or at any altitude below the IFR minimum obstruction clearance altitude at that location. An even better plan would have been to request from the Centre a block of airspace for holding practice in VMC over the VOR.

Regardless of all this, in Class 'D' airspace in VMC conditions, the responsibility to ensure adequate spacing between IFR and VFR aircraft rests with the flight crew of both aircraft, in accordance with the 'see and be seen' rules. In this case, neither flight crew was conducting lookout procedures adequate to detect the other aircraft before there was a risk of collision.

This situation and the appropriate responsibilities are fully covered in the AIP Canada, RAC 6-2 IFR Flights in VFR weather. This states 'An IFR clearance provides separation between IFR aircraft only. Pilots operating IFR must be aware of the need to provide their own separation visually from VFR aircraft when operating in VFR weather conditions'.

Meanwhile, it behoves us all to 'look out or luck out', and hopefully learn a little more from this incident.

[The Australian see and avoid Regulation contains the phrase '...as far as it is practicable to do so...'. ASD suggests that although this proviso may offer a sustainable defence at law, it's not much use to you if you're already history. Single-pilot IFR, be advised! — ed]

AIRFLOW

Dear Sir,

Helicopter Etiquette

In over 14 years of helicopter bush flying, I have noticed that many pilots neither know nor apparently have been taught good manners around homesteads, houses, stations, hotels or indeed on other people's property generally.

Once, I received a lift in a Bell 47 one Saturday afternoon. The helicopter was parked near a hotel in outback NT. On the Sunday morning, startup was just on first light, and then the pilot took off and flew first towards the hotel then around it at about 100ft AGL. This was at six am. Why he did it I'll never know, but I told him that he should have flown directly away from the place (and if he kept that altitude, he'd find sand in his oil!).

Maybe some new pilots think they are macho, but bush people put up with choppers as a necessity, even though they are very noisy and blow dust all over the place.

I have also seen pilots do beat-ups and low-level stall turns in fixed wing aircraft over the roofs of pubs, houses and stations. They did not impress me.

When approaching a property, a pilot should circle around, look for the fuel dump, then land on the far side, well away from the property — the last thing the lady of the house wants is dust and sand all through the washing on the line and dirt blown all through the house due to some clown who thinks it's clever to land by the front door. Also, from a safety point of view, houses out bush often have on the roof HF aerials for the flying doctor etc. These may not be obvious to those flying in too close proximity.

I hope new pilots note these remarks.

Yours sincerely

Brian E Mansfield.

Thank you, Mr Mansfield, for your comments. What you are talking about is airmanship really, and airmanship is what aviation safety is all about. Incidentally, as a 'townie', I always believed that in the bush they had their own ways of sorting out social delinquents...?

Dear Sir,

I would like to tell you of an experience that I had recently, in the hope that it might save someone else a similar one.

We had recently purchased an aged M20B Mooney, 2800 hrs TT, that had spent most of its life shedded in a Central Western environment.

The only problem the previous owner could tell us of was a tendency to be hard to start on 'hot starts'. We gave it a 100 hr check and all was OK, so I carried out some familiarisation circuits prior to setting out for our CQ property to help with the wheat harvest.

Suddenly, on the Bilocla-Dingo leg, the engine lost power, seeming to be running on a couple of plugs only. Fortunately, a strong south-westerly had placed me a little north of track and Duaringa airstrip was in sight. I tracked there direct, doing checks en route: mixture; left then right tank; auxiliary fuel pumps on (no change); left magneto the same; right magneto — and the motor completely stopped firing, making no further noise. With prop windmilling I carried out a successful glide landing on the strip. I then called Rocky FS, who were most helpful in relaying information.

The LAME who had performed the 100 hr examined the engine and revealed that the left maggie had been breaking down under heat stress to produce only a very weak spark and firing only the two plugs with the shortest leads. This was what had apparently been causing the hot start problem. The right maggie had lost a vital wire to the condenser, thus going quite dead.

My concern is that the left maggie (the one used for starting) had been checking OK under cool pre take-off run-ups. It is my intention now to occasionally do either an in-flight or on-ground maggie check at my destination, to see if any breakdown in efficiency is being caused due heat.

Gordon H. Reinke

We asked an Examiner of Airmen (GA) for his comments on this. While he was extremely pleased at the outcome of the forced landing ('It's always very satisfying to pull off the real thing, no matter how many practices you have done'), there was a serious problem with the technique employed to check the electrics. A magneto check on the ground is fine, but in flight it's a no-no, and should be done only as a last resort, when the motor is not giving enough power to fly the aircraft and there's nowhere to go. In Gordon's situation there was somewhere and, with the emergency strip in sight, it possibly would have been better to accept what power there was, rather than run the risk of what in fact happened. The old adage so often applies: IF IT'S WORKING, LEAVE IT ALONE!

[Perhaps the pilot could better have used the (short) time available to him after realising that the engine was running rough to call FS ***before*** *attempting a landing.-Ed]*