August 2005
Newsletter No. 115

AIRTOURER ASSOCIATION

Dedicated to the preservation and continued airworthiness of VICTA and AESL Airtourer Series Aircraft

NEWSLETTER

http://www.Airtourer.asn.au

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Editorial

This time of year is generally quiet for the Association except for the membership renewals. Unfortunately, other areas of life are not so quiet so this Newsletter is about two weeks later than I had planned. Also included are the mermbership renewals. I have decided to delay them to be included with the newsletter to save on postage.

Stan Tilly is in the final stages of writing a booklet on Airtourer aerobatics. Naturally he covers stalling and spinning and I saw this as an appropriate opportunity to look at Airtourer spinning. In particular I have always felt that the advice in the Flight Manual regarding use of the "Standard Recovery Technique"

Continued on last page

Cover Photo: One of a series of photos recieved from Jim Livingstone. It shows BWD at Parafield with the Royal Aero Club of South Australia in February 1966. The pilot is Jim on his first solo.

Disclaimer

The views expressed are those of the contributors and not necessarily those of the Publishers, the Airtourer Association or the Airtourer Co-Operative Ltd.

President's Pen

Hi Everyone,

XVV arrived early at Broken Hill, about noon on the Wednesday, in order to check the arrangements for the AGM. It was astounding to find seven more aircraft on the ground before dark, and even more so to have eighteen people for dinner at the Old Willyama that night!

Arrivals continued on Thursday and we ended up with thirty one aircraft and some seventy eight people on the Saturday. Should the trend continue we may have to call it the Airtourer Annual General Week! Thanks and congratulations to everyone who participated in the event, with particular emphasis on the presence of our "new" members.

The President's Fly-in this year has been arranged for Toowoomba on the weekend of 28th October, and we have a full programme, (see Registration elsewhere in this issue for details), which I'm sure you will find interesting.

The decision on a locale for the 2006 AGM has been in abeyance due to the proposed "Claytons Security Regulations", which will apparently require the possession of a security card by all personnel visiting any airport with RPT service. One wonders if the authors of this legislation have been watching too many "reality"? TV Shows. Our choice of venues for future Fly-ins may be severely limited if confined to those airports without RPT services. Our only recourse appears to be in writing to your local member in protest. There will be a committee meeting in Toowoomba to decide on the AGM – Please convey your suggestions to a committee member.

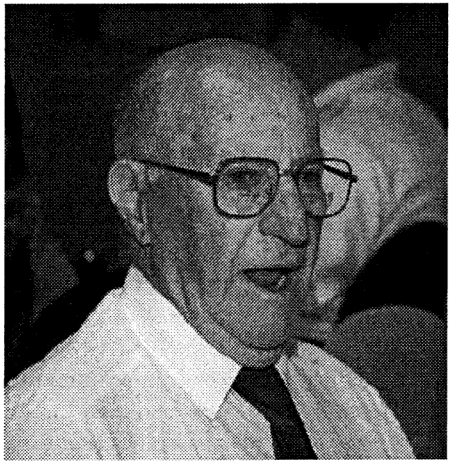
We have been at pains to take steps to keep the cost of flying weekends to affordable limits. One cost-effective method has been the hire of a minibus to do the shuttle transport to and from airports, and to meeting venues where necessary. This has depended on volunteers giving up a fair portion of their weekend to do the driving. It would be appreciated if more volunteers would come forward in the future to distribute the work involved over more members.

Safe flying to all, and hope to see you at Toowoomba.

Bill Pennell.

Fibreglass Repairs

Bill Miller



I assume that some members know that in a previous life I held various approvals to manufacture aircraft components. All fibreglass components including cargo pods, which are stressed components, and like cowls, need to be fire retardant due to proximity to exhausts. I also held approvals for various sheet metal components including spinner backs and steady plates as well as machined aluminium extensions for wooden propellers on Austers, Tiger Moths and homebuilts.

My backgound is as a pattern maker and tool maker but I've done a lot of night schooling in my life. Over time I have formal qualifications in motor mechanics, automatic transmissions and other skills. In the aviation line I've done an RMIT course in aircraft sheet metal work and held DOT/CASA approvals for aluminium and chrome-moly stainless welding. Now retired at 78 years of age I have over the past 15 years passed this experience on to developing countries in the Pacific area. One could tell some funny stories from these experiences. I wonder these days how I ever found time to go to work. But I digress, back to fiberglass....

Over the years I have received many fiberglass parts to repair. Normally I don't repair as the parts are either too old, not repairable or if they are then the cost of repair is close to the cost of a new part. Even if it is repaired it's still an old part and may not last as long as a new part. I've had people ask for parts just to be made serviceable as they don't want to spend much money or are intending to sell soon etc. Unfortunately there have been cases where years later the part has cracked and you get the blame for a poor repair.

Many LAMEs are not used to modern fibreglass products and while not wishing to criticize their work fibreglass has changed more than steel and aluminium. Some people think that working with fibreglass is simply a matter of mixing glass, resin and hardener, throw it up against a wall shouting abra cadabra and it comes down as an engine cowl or whatever. The reality is more involved with the requirement to make molds, usually female to get the smooth finish with gelcoat then the male for making the part. Yes chaps, even fibreglass has male and female.

Most people use polyester resins and what is called matt glass. This is made up of lots of short fibreglass threads laid out in a criss-cross pattern with a sealer or wetting agent in it, similar to chipboard. This is user friendly to the person making the part. The modern epoxies are not as bad as the early days when they were very toxic however, gloves and protective masks are still a must. Home build-

ers of the early Rutan type fibreglass aircraft developed many allergies and severe rashes etc. I knew of one such builder who died of cancer. I also knew a brilliant young New Zealander who designed and built racing motorcycles of a unique design for the Isle of Man who died in the space of a few years of cancer from the resins he worked with.

I've found many of these resins in 3rd world countries where the USA and European countries have dumped 44 gallon drums of these products. It would appear they don't care about some of these countries. I refused to enter one factory in Thailand where I found drums with skull and cross bones and warning signs on them. After three weeks I convinced them to remove the highly toxic resins.

It's important to understand the compatibility of various resins and reinforcing materials. Using incompatible materials can be dangerous, an example was Steve Wittman who inadvertently used a glue that was incompatible with the fabric on his aircraft wing. The fabric separated leading to the loss of the aircraft, Steve and his wife. I have had plastic spats or wing tips brought to me with repairs that have lasted less time than it took to carry out in the first place. Some of these repairs have been carried out by LAMEs. Some parts can be repaired with epoxies and suitable reinforcements but are not worth the time and cost. At least if one sticks to polyester resin or vinyl ester for extra strength and heat resistance they are easily repairable.

If a part is repairable the damaged area should be ground and sanded over an area that is at least 25mm each side of the damage. The edges should be feathered and the surface should have a rough finish to allow the capillary action of the resin to ensure a permanent joint. Good preparation can result in 95% of original strength.

Engine cowls don't have much going for them when it comes to repairs. The results of oil absorption, engine and exhaust heat make repairs difficult. I have seen cases where too much resin was used however this does not add strength, just weight. Strength comes from the type of material, it's weave and weight. The resin simply fills and impregnates the material to give it stiffness. When it comes to stressed parts the material must be carefully selected to carry the loads for which it was designed.

For some years carbon fibre and other such high load carrying materials have been the buzz. But unless they are used specifically for the purposes for which they were designed, i.e. high stress parts, they are no more effective but more costly than what we have now. In any case, who has an autoclave or vacuum system in their back shed?

I first received my DCA/DOT/CASA or whatever department it was called at the time approval 38 years ago. I had not been brought up in the very conservative, restrictive to ideas culture of aviation so I did things with sound trade practice and good materials. That way I produced a cost effective product of good quality and appearance, and long service life.

I was using various weight matts with some woven material as well on parts that were not stressed, i.e. cowls and spinners. The aviation purists were shocked that I was not using woven cloth. Why was I doing that? It was cheaper and the matt followed complex shapes much better thereby spreading the loads. Also the weave of the material did not show through the gelcoat or paint. Look at some weathered cowls today and you will see the weave of the cloth showing through. If a tissue thin matt was used the weave did not show and the finish of the part was much better.

Eventually, to satisfy the purists, I changed my methods and while still using matt

as the main reinforcement I finished with a layer of woven cloth. When the purists saw the woven material my part was accepted as OK.

In summary.

Plastic parts such as spats, wingtips and other similar fairings can be repaired with epoxies if the repair is relatively minor and worth the time and effort. Use a suitable repair scheme and do not use polyester resins as they do not work.

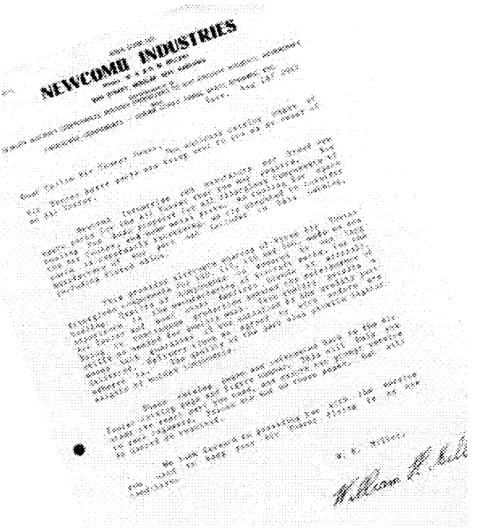
Check if the fibreglass part was reinforced and use the same type of glass matrix and resin in the repair.

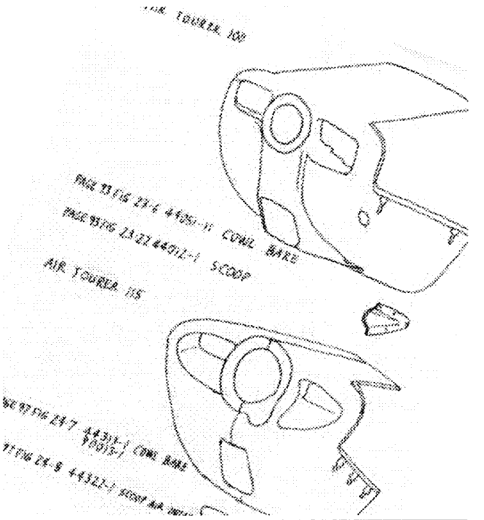
Remember that thicker is not necessarily stronger. Do not overuse glass cloth or matt and especially do not overuse resin to wet the material out. You should be able to see the weave of the cloth not the shiny surface of the resin. Weigh all the materials including the hardener, remember extra kilos mean less fuel or payload. Weigh the part before and after the repair.

Cowls or other parts that need to be flame resistant should be checked. Take a small strip of material from the part and hold over a match or other heat source with pliers until it flames. Remove the heat source and the flame should self extinguish from the fire retardant fumes. If the flame does not extinguish you could have a nice fire in flight, have the chops ready! Not using fire retardant materials on an aircraft is very dangerous. Unfortunately flame retardant materials are not readily available and I am sorry to say that some LAMEs use standard resins. If in doubt contact the manufacturer of the fibreglass materials, an approved fibreglasser or if any member has a query then I can help with information.

There are summer and winter mixes of resins just like summer and winter blends of fuels. Temperature and humidity affects the laying up of the parts. If you have a winter blend the addition of cobalt in the right measures can help. The amount of hardener may vary depending on temperature, always measure carefully.

It is best to mix up small batches first to get the right mix for the temperature of the day. Too much hardener can cause the mixture to boil in extreme cases.


NEWCOMB INDUSTRIES



"Mechanical Diversions" or "Let's stop Here!"

Bill Pennell
VH-XVV

A fine Saturday morning and we are at Redcliffe early. Today's schedule is RED to TEMORA via Moree, stay the night with the Poyitt's, and on to Tuki to visit the Victorian Fly In on Sunday morning.

Fuel up, take off on time, VFR on top of some cloud on the ranges, and by 0800 local we are past Toowoomba heading out over the Darling Downs at 6500 in beautiful cloud free sunshine, with maybe ten Kts on the tail, congratulating ourselves on our airmanship!

Without any warning, our low time engine abruptly loses power and starts to vibrate severely enough to make a blur of the panel! This is not a drill! No matter how often you practice emergency drills, when it really happens you are on the back foot for some seconds, (which feel like minutes).

Fuel boost on, full rich, T's & P's are all normal, play with throttle settings and mag switch. Nothing seems to improve things – the left mag shows a bigger drop so I am sure it is not a fuel problem. Moree is still some 90 miles on and the engine feels ready to depart the airframe!

I start to look for clear spaces, then P2 remembers passing over an ag strip at Inglewood only ten minutes before, I make a (very) fast 180 and reduce power in an effort to lessen the rough running. We arrive overhead still with 3000 AGL and do a dive bomber approach for two legs of a circuit into wind. On the ground the engine runs erratically at anything above 1500 rpm, so – shut down and think! There is no building on the strip but the town can't be more than a mile or two, switch on the mobile phone and it works! We waste a couple of hours changing plugs, which appears to make things worse (did remember to cancel SAR though).

I felt brief empathy with an Indian second engineer on my ship who once rang me at 4 am shouting:

"CHIEF, CHIEF, THE ENGINE IS STOPPING, THE ENGINE IS STOPPING!!!

Why?

I DON'T KNOW, I DON'T KNOW, I DON'T KNOW.!!!!

With help from Ian by mobile phone we manage to contact a LAME at Moree, who agrees to come up tomorrow, Sunday, so we ring the only motel in town, whose proprietor picks us up.

Huge steaks and a bottle of red provide some consolation.

Next morning after some experimenting, LAME removes left mag and pronounces

it hopefully the cause of the problem, so we have no option but to take it back to Brisbane for repair. Much phoning around does not find a self drive car or other means of transport within 100 miles, so at 3 pm we board the milk run bus back to Brisbane, magneto under arm - arriving at 8 pm, totally exhausted.

Next morning I take magneto to the test bench at Archerfield and witness a trial run. Sure enough it throws a reasonable length spark, but the timing is varying in a random manner and occasionally the sparking is intermittent on some cylinders! When the "P" lead is **removed**- there is no spark at all! (this also disconnects the RF capacitor)

Even the expert says this is an unusual failure.

Condensers normally fail by rupture of the dielectric shield, causing a direct short between elements, or a short to the metal outer casing. Because the condenser is connected across the contact breaker, this will have the effect of shorting out the points - result no spark at all, ie the effect is the same as when the "P" lead is grounded when ignition is turned off.

In our case however, the condenser has progressively lost its capacitance over some period until it finally went open circuit at the time of our upset. It's function was then partly taken over by the external RF suppression capacitor which, on the Bendix SLN magneto is connected to the high side of the primary winding in common with the "P" lead (see diagram). Because this capacitor has a different capacitance value to the points condenser and is mounted external to the magneto, under these circumstances it can cause erratic and intermittent spark timing as witnessed in our case.

What does all this mean?

Disregarding the technical explanation—

For some months before the incident we had occasionally seen slightly greater mag drop on the LH side. Also on some occasions I had momentarily felt what I thought was slightly rough running in cruise, but we had put it down to lead on plugs, or simply to the fact that we were over tiger country at the time and my imagination was acting up (as you do!).

All plugs were renewed at our last annual at my request.

Both magnetos had been overhauled and zero timed only some 100 hours previous to the incident, so that right up to the time it went on the test bench I was still mentally convinced it could not be a magneto fault. Electronic components however can and do fail prematurely at any time under Murphy's Law. Remember that new light globe that went "pop"!

The moral to all this is:

1. Do not accept any sign of increased mag drop which cannot be cured by plug cleaning or replacement.

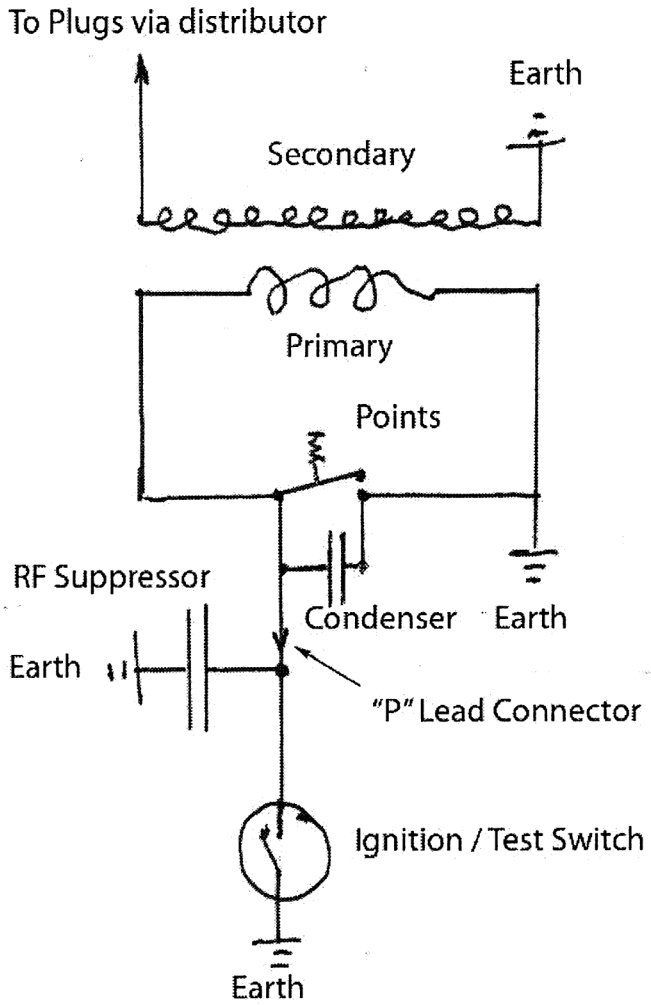
2. Never ignore any sign of even minor rough running in the air even if your imagination insists it's not there!

All ended well three days later when I bribed Neil to fly me and the restored magneto back to the paddock in the 210, and our engine ran perfectly.

We made some friends in Inglewood (country people are great!) and learnt another lesson about flying!

So, my apologies to the Victorian members for missing their fly in. I hear the trout was fabulous.

Another cheap flying weekend in the country!



Magneto Electrical Schematic

Victa Report AER-4, February 1965

AIRTOURER SPINNING CHARACTERISTICS

INTRODUCTION

Victa Airtourers 100 and 115 are both approved by the Australian Dept of Civil Aviation to perform two-turn spins from any attitude for training, demonstration or any other purposes. On the strength of that, this design had received it's Type approval in Fully Aerobatic Category in July, 1962. Both types (of which 105 have been built to date) are being produced in quantity of 100 A/C per annum at the Victa Aviation plant at Milperra, N.S.W., and are used as training aircraft by 35 Aero Clubs in Australia and New Zealand.

BRIEF STORY OF AIRTOURER SPINNING TRIALS.

Prior to it's certification the Airtourer underwent 6 months extensive spinning trials and some modifications of tail end and control angles were found necessary. The final production configuration is D.C.A. approved to two turns of spin in service or four turns in flight tests by Victa pilots. In it's original prototype form the aircraft could be made to enter a flat type spin, after five turns if out-spin aileron was used, from which the recovery was prolonged and difficult and furthermore required an unusual form of control application, namely the in-spin aileron deflection, both quite unacceptable for a training aircraft. Consequently the relevant control angles, namely rudder, (port and starboard) and up elevator angles were reduced and the control stops strengthened. It is now impossible to enter a stable mode spin using any combination of controls and/or C.G. positions (even with 1% of SMC aft of rearmost limit.)

AERODYNAMICS.

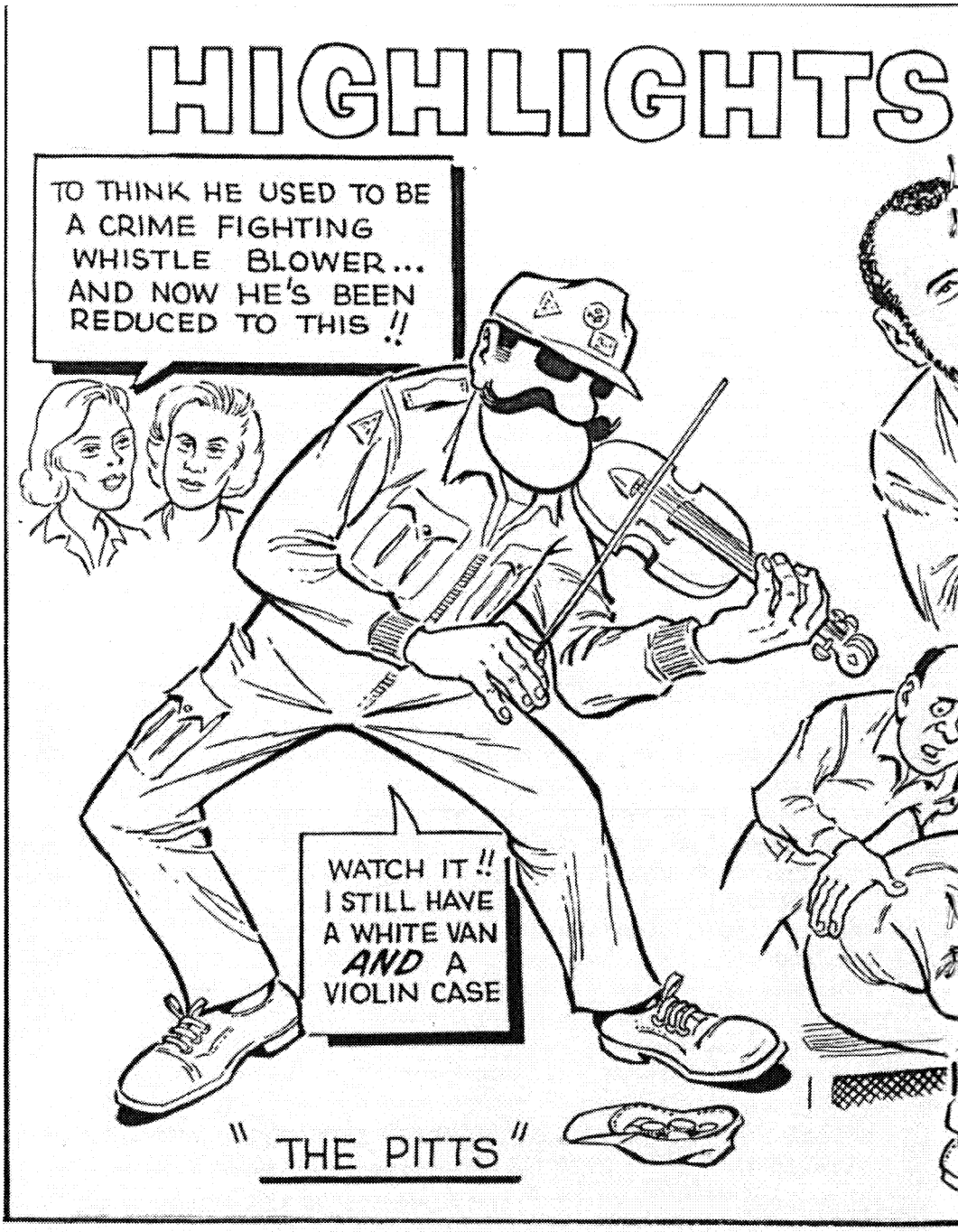
Wind tunnel tests on a similar configuration, were conducted at the Aeronautical Research laboratories at very high angles of incidence, and flight tests using streamer tech-

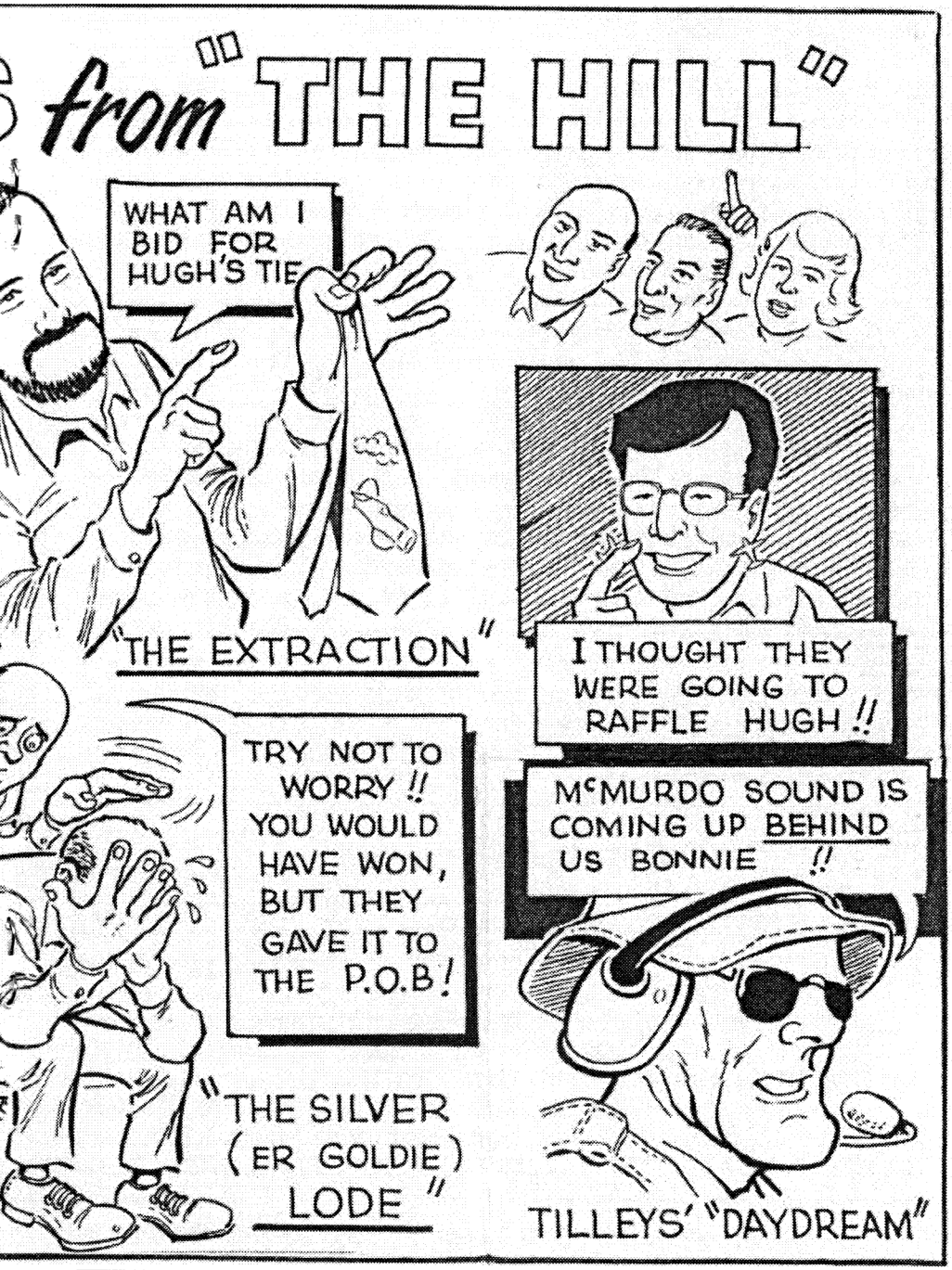
niques were carried out in order to ascertain the aerodynamic reasons behind the two modes of spin. A colour film taken in the spin as well as the wind tunnel data are available. It has been proven that the initial two turns of spin are those of a true spin, namely the inboard wing is deeply stalled with a wake thickness of 2-2 ½ feet depth - whereas the outboard wing becomes unstalled as the rotation develops with the fuselage acting as an end plate, completely separating the two wings. Due to insufficient control angles, particularly the elevator up angle, the aircraft nose down pitching moment is too high for the elevator nose up moment and thus cannot be balanced. Consequently the spin develops quickly into an unsteady mode of spin, with airspeed steadily increasing until it reaches such high values (in the fourth or fifth turn) that the aircraft either unstalls and recovers on it's own accord, or there looms a danger of exceeding the Vne on recovery. Measured along the normal (vertical) axis the acceleration force does not exceed 2.8 G during the rotation with full up elevator and speeds exceeding 120 knots. This alone proves that this unstable rotation is a spin and not a spiral, otherwise at 120 knots with full up elevator 6 G would be long exceeded in a pure spiral (Va = 122 knots EAS at 6 G).

STRUCTURAL PROBLEMS

As a result of one wing being deeply stalled in a spin and the other one still flying, the respective wakes behind them are entirely different. Consequently, the tail unit, situated in such airflow is subjected to high asymmetric bending moments of an unusual and novel type, never before described or calculated.
On the inspin side the tailplane and elevator are both stalled and are submerged in a wake of high turbulence and low velocity, so low that the resultant load on this side can be ignored. On the outspin half, the tailplane has a measured incidence of about 11 degrees and is supplied with a steady airflow of full airspeed. The fullup elevator of 21 degrees is incapable of overcoming the large negative pitching moment due to tailplane incidence and the stalled wing. This effect puts on the tail a high asymmetric down

Continued on page 14


HIGHLIGHTS
TO THINK HE USED TO BE A CRIME FIGHTING WHISTLE BLOWER... AND NOW HE'S BEEN REDUCED TO THIS !!
WATCH IT !! I STILL HAVE A WHITE VAN AND A VIOLIN CASE
"THE PITTS"


from "THE HILL"
WHAT AM I BID FOR HUGH'S TIE
"THE EXTRACTION"
I THOUGHT THEY WERE GOING TO RAFFLE HUGH !!
TRY NOT TO WORRY !! YOU WOULD HAVE WON, BUT THEY GAVE IT TO THE P.O.B !
McMURDO SOUND IS COMING UP BEHIND US BONNIE !!
"THE SILVER (ER GOLDIE) LODE"
TILLEYS' "DAYDREAM"

load and drag load. The magnitude of the resulting bending moments in two planes were found to be much more critical than any other design tail load required by ANOs, BCARs or CAM3s. Discovering such a high asymmetric drag load on the tailplane and elevator in a spin is claimed to be an original Victa finding, and is believed to apply generally to other aircraft. The proving of this load explained the service cracking of the original tailplane to fuselage fittings in 150-200 hours. These had to be completely redesigned to carry about twice the then ANO asymmetric tail load. The redesigned fittings have not shown any signs of deterioration in service life of 1,000 and more hours.

SUMMARY

It is the opinion of the Australian Dept. of Civil Aviation and of operators with many thousands of hours of training experience in the Victa Airtourer, that it is safe in all phases of spinning and that it is completely suitable for training purposes as it enters and recovers from a spin of up to two turns using conventional technique, and this provides a clean demonstration to the student of the techniques of spin initiation and recovery.

Calendar of Events

South Australian Fly-In
1st-3rd October 2005
Port Lincoln
Details page 18

President's Fly-In 2005
28th-31st October 2005
Details page 21

A Test Pilot's Observation 40 Years On

John O'Halloran

I purchased my Airtourer almost 20 years ago and less than a year after graduating from the Empire Test Pilot's School. Naturally I conducted an evaluation of my new acquisition in the light of my recent training. One thing that struck me was the lack of aft stick travel, in particular at the point of stall where the backstop was encountered just after the point of stall. Additionally, I found the spin interesting if not a little disappointing. Rather that a stable conventional spin it appeared to be bordering on a spiral and appeared to recover when pro-spin controls were relaxed. At the time I was stationed at the Aircraft Research and Development Unit (ARDU) which had a range of aircraft including some CT-4As. The spinning characteristics of these CT4s were quite different from my Airtouter despite the similar shape.

Although I first soloed on the Winjeel the initial part of my Pilot's Course proper was on the CT4 and at the time intentional spinning was banned. The RAAF had mixed experience with spinning the CT4 and in the late '70s tasked ARDU to complete a detailed evaluation. This was done well before my time so I reviewed the report and did some spin investigation myself. The CT4 spin had many similarities to the Airtourer as described in the report on page 10. The main problem was the possibility, after four turns, of entering a high rate spin that could flatten out. In this case a number of turns would be required to recover. Additionally, there were engine problems with loss of oil pressure causing the propeller to overspeed or the engine stopping altogether. Overall it was assessed that a student pilot may not have sufficient experience to successfully recover from this high rate, flat spin mode and hence intentional solo student spinning was prohibited. Subsequently there were reports of reluctance to recover during instructional sorties and eventually fully developed spins were banned. At one point some bush lawyer discovered that intentional inverted spinning was not specifically banned and since it was smooth and non-oscillatory the inverted mode was being used to demonstrate spinning. Eventually the system caught up and the words "Intentional inverted and erect stable spins are prohibited...." were inserted into the RAAF Flight Manual. However, the Kiwis assessed it differently and allowed intentional solo student spinning. I am not aware of any CT4 being lost due to a spin training accident. Current CT-4As subject to the Pacific Aerospace Corporation Flight Manual are approved for intentional spinning.

Armed with the foregoing knowledge I discussed Airtourer spinning with Henry over a bottle(s) of red at Griffith. I felt adjusting the elevator stop to allow more up elevator would keep the wings in the stall and possibly allow a more stable spin to develop. He replied, "Ah yes, but you must remember to remove the rudder stop as well!" He went on to complain that, "They castrated my aeroplane."

The Airtourer was certified to ANO 101.1 current in October 1960. I don't have a copy of the relevant ANO however the spinning requirements would have included the ability to recover from a multi turn spin, possibly as many as eight, using the "standard method", usually within 1 ½ turns. The second paragraph of the article above explains this was not possible and the elevator and rudder deflections were restricted to ensure the flat mode spin could not be induced.

Standard Spin Recovery Technique

John O'Halloran

Recovery Use standard recovery technique. Recovery is almost immediate.
Approved Flight Manual & Pilot's Operating Handbook, Airtourer.

This rather benign statement describes how to recover from a major killer in aviation. This is not a criticism of the current Flight Manual as it is copied exactly from the original Pilot's Handbook. Nevertheless, such an important emergency procedure requires amplification.

When the Airtourer was introduced it replaced aircraft such as the Tiger Moth and Chipmunk and spinning was a well established part of the training syllabus. Since then manufactures have made aircraft spin resistant and in many cases intentional spinning is prohibited. As a result a lot of spin knowledge previously accepted as normal airmanship has been lost and the term "Standard Recovery Technique" is no longer appropriate. There remains confusion regarding stall/spin behaviour and recovery techniques so it is worthwhile to look at the historical development of spinning before attempting to determine the standard technique.

All aeroplanes can be made to spin if abused badly, those that claim to be spin-proof are usually limited so that they cannot be abused badly enough. This is the case of the Airtouer as discussed in other articles in this current Newlsetter.

Each aircraft type spins differently and in some cases a standard technique is not appropriate nor will some of the following discussion apply to all aircraft. In these cases very specific spin information and recovery techniques will be provided in the Flight Manual. Unfortunately human factors can come into play and the well established behaviour of reverting to previous knowledge under pressure can lead to use of incorrect techniques. A friend of mine experienced this on pilot's course when flying the Macchi jet. On a solo handling sortie a stall turn did not work out and resulted in a spin. The Macchi required the elevator to be placed neutral as part of the recovery procedure but when the spin did not recover in the expected time the pilot reverted to the technique learned months earlier on the CT4 and placed the column full forward. The minimum ejection altitude, out of control, was 10,000ft so when he saw the altimeter rapidly unwinding past 7,000ft he pulled the ejection seat handle and lived to tell the tale. Subsequently it was determined that the Macchi entered an inverted spin from the mishandled stall turn and full forward column prevented it from recovering whereas the correct position of neutral would have eventually been successful.

One of the earliest documented procedures was published in Practical Flying of 1918, which quoted "placing the controls – rudder and stick – central". This will work for many aeroplanes currently flying but was

inadequate for many of that time where two distinct control movements were required. The National Advisory Committee for Aeronautics (NACA) was the predecessor or the current NASA and provided extensive information and advice to the aviation community. In it's Technical Note No 555 Procedure (1936) it advised:

1) Briskly move the rudder to a position full against the spin.
2) After the lapse of appreciable time, say after at least one-half additional turn has been made, briskly move the elevator to approximately the full down position.
3) Hold these positions of the controls until recovery is effected.

There are some very important points in this advice. Firstly the rudder input should not only precede the elevator but there should be a pause between the two. The primary purpose of the rudder is to check the yaw rate, in doing so the nose of the aircraft should go down and the elevator become more effective. On many aircraft, and to a limited extent the Airtourer, the elevator shields the rudder with the stick full forward (elevator full up). Delaying the application of down elevator increases the overall effect of the rudder. On the Airtourer the rudder is mostly forward of the elevator however when held full up the vertical vane that extends into the tail cone will provide an additional surface similar to the rudder.

The rudder input should be brisk, the Technical Note goes on to state, "In certain cases it has been found that, with a slow and cautions reversal of the rudder and elevator, spinning will continue indefinitely; whereas brisk operation of these controls would have effected recovery".

World War II saw rapid development in aviation. Powerful engines with large propellers and their associated gyroscopic effects introduced new influences into spinning characteristics. The 1943, Cadet's Handbook of Elementary Flying Training, advised the following:

1) "...apply full opposite rudder...with your full strength.."
2) "...when you see that the rotation has practically stopped, press the stick forward...."
3) "...and finally ease off the rudder..."

Again the emphasis on rudder to oppose the rotation and then elevator to unstall the wings. It goes on to include an *emergency action* of, "Throughout, always keep full opposite rudder applied", then describing use of elevator and power to rock the aircraft out of the stall.

Later the RAF Manual of Flying Vol. 2 introduced a step to keep the ailerons neutral. Ailerons can be a powerful influence on the spin characteristics, the actual influence depends on their effectiveness in the conventional sense and the balance between the aerodynamic and gyroscopic effects. On high performance jet aircraft where most of the mass is in the fuselage the gyroscopic effect is such that outspin aileron can pitch the aircraft from an erect to an inverted spin. I experienced this at ETPS on the Hawk and the Hunter, only one of them intentionally! The RAAF experienced some cases where the CT4 was reluctant to recover from a spin and inadvertent application of small amounts of aileron was suspected to be the cause. The CT4 has a marker stripe on the instrument panel for alignment of the control column to ensure ailerons are neutral.

One recurring theme in the various recommended spin recovery techniques was the possibility of the spin taking some time to recover. The NACA Tech. Note states:

"It is not uncommon for a bad-spinning airplane to make at least 5 turns before the recovery control begins to give any satisfactory results.... In the event, then, of a vicious spin, a rule of great importance is to hold the controls applied for recovery for at least 5 turns before attempting any other measure to promote recovery."

Over time we have seen a gradual development in the awareness of the different influences of various controls on the recovery from the spin. The initial use of rudder and elevator progressed to the interrelation of the two and the importance of rudder blanking and the requirement to counter the yaw rate before unstalling the wings. Later, propeller effects and the use of aileron were introduced and finally the acknowledgement that a spin could take many turns to recover.

The most recent authoritative standard recovery procedure I have found was published by the UK CAA in the British Civil Airworthiness Requirements, paper No. K711 dated 9th April 1991.

Standard recovery procedure is as follows:

a. Close throttle;
b. Centralise ailerons;
c. Apply full rudder to oppose yaw rate;
d. Pause;
e. Push the control column forward as necessary until rotation ceases;
f. When rotation ceases, centralise the rudder and recover from the ensuing dive.

So where does this leave us in answering the original question of what is the "standard technique" for the Airtourer. From my experience the UK CAA procedure, which incidentally was the same procedure I was first taught on the Winjeel, will work. However simpler techniques will also work on the Airtourer but if it is being used to teach spinning a case could be made to use the standard procedure.

SOUTH AUSTRALIAN BRANCH AIRTOURER FLYIN

NOT RESTRICTED TO AIRTOURERS, WE LIKE THINGS THAT FLY IN THIS STATE
30th September 2005 to 3rd October

How to get there! For most of Australia navigation is easy, follow the river , or keep the coast on your right, water on your left, coming from the eastern states,(reverse the process to go home). Fly at 3500ft once out of eastern states and you can't hit anything.
From western state keep land on the left, water on the right, when you see a plane in your windscreen 500 feet above or below he is coming from the other direction and with a bit of luck you have both arrived at port Lincoln as South Australia is strategically placed in the centre of the southern coast for purposes of easy navigation. (Failing that punch up the GPS).

Booking is critical as the City comes alive on the October long weekend, mention you are with the flyin group coming for the long weekend.

The list of accommodation follows. Most is within the city and most of the venues will be short distance to walk but bus travel will be organised to get people from A to B. Details of other accommodation options such as B&B can be obtained from the Port Lincoln Visitor Information Centre on 1300 788 378, or www.visitportlincoln.net

Hotel / Motel	RAA *	Single	Double	Dining
Blue Seas Motel 7 Gloucester Tce (08) 8682 3022	3.5	$89	$89-95	Tea & Coffee
Boston Hotel 19 King St (08) 8682 1311		From$25	$35-85	On site rest.
Boston House Lincoln Highway (08) 8682 1872		$40	$50	Breakfast avail. in rooms
First Landing Motel 11 Shaen St 8682 2344	3.5	$63-$86	$70-$76	Tea/Coffee
Grand Tasman Hotel 94 Tasman Tce (08) 8682 2133	3	$50-$65	$75	On site rest.
Hilton Motel 13 King St (08) 8682 1144	4.5	$120-$140	$120-$200	On site rest.
Peninsula Motel 12-14 Tasman Tce (08) 8682 2033	3.5	$60-$82	$71-$93	Breakfast in room or rest.
Limani Motel 30 Lincoln Hway (08) 8682 2200	3.5	$109-$155	$114-$155	Tea/Coffee Toaster
Marina Hotel Suites 13 Jubilee Drive (08) 8682 6141	4	$130	$130-$155	Full room service
Navigators Motel 2 Normandy Plce (08) 8682 4633	3.5	$75-$98	$85-$105	On site rest.
Pier Hotel 33 Tasman Tce (08) 8682 1322		From $65	$80-$110	On site rest.

Activity Options: The following are some of the activity options, I am after your feedback so please number your preference 1 to 9 and let me know.

1____ Trip to Coffin Bay Game of Mini Golf and Lunch at the Oyster Beds Restaurant.
2____ Barbeque at the Flying Club then drive or fly to the wind farms past Sleaford bay and Whalers Way blow holes
3_____ Electric boat tour of the Marina, (can be a catered). The non sailors could lunch on the deck of the Marine hotel.
4_____ Alex Stenross Maritime museum
5_____Sea Horse farm (no free rides)
6_____ Harbour cruise.
7_____ Wine tasting Boston Bay Winery.
8_____Fly-in to a mystery location with a barbeque. The trip will not be a long one but we have least seven choices of landing strips.
9_____ A coastal trip past some of the most spectacular coastline with barbeque at the end of it.

Please fill in and return by email to Glenn Sturges [phantomw@centralonline.com.au] or snail mail to:

G.Sturges
Box 76
Whyalla
South Australia 5600

Any Questions phone 0886450467. or email me..
Also send the following to me if you want to save on stamps, I can forward it on to David.

Copy or cut the following and forward to David Hall.
Deposit of $50-00 per person required

Number of Persons_____
Names_____pilot_____Navigator
Aircraft Registration_____Type_____
Others Attending_____ _____
Please mail your **Cheque** to : Mr David Hall
Lincoln Fly in
PO Box 1324
Port Lincoln S.A. 5606

NOTE
From your last departure point please mark in a sealed envelope your estimated fuel consumption and time for the leg to arrive at Port Lincoln bring one apple with you and a knife.

PRESIDENT'S FLY-IN

TOOWOOMBA, QLD.

28th October, 2005 to 31st October, 2005
We hope you will join us for a week-end of fun and friendship.

ACCOMMODATION: Rooms will be held until 30th September, 2005

WHEN BOOKING ACCOMMODATION PLEASE MENTION AIRTOURER ASSOCIATION

SUNRAY MOTOR INN
Cnr Bridge & McDougall Streets, Toowoomba
Phone 1-800.807.874
Air-conditioning (Reverse Cycle), Pool, Laundry, Breakfast Room, Mostly Queen Size Beds, Austar TV, Hairdryers
Single $79, Double 85 , Twin (2 Double Beds) $89, Extra Adults $10
2 long blocks from Saturday night's venue

COTSWOLD MOTOR INN
Cnr Bridge & Boundary Streets, Toowoomba
Phone 07-4633.3344
Pool, Restaurant, AustarTV, Queen Size Beds, Reverse Cycle Airconditioning, Austar TV, Hairdryers
Single $80, Double $82 , Twin $90, Extra Adult $10
Not far from the Sunray

BRIDGE STREET MOTOR INN
291 Bridge Street, Toowoomba
Phone 07-4634.3299
Pool, Austar TV, Queen Size Beds, Airconditioning, Hair dryer, Laundry
Single $65, Double $75, Twin $75, 1 & 2 Bedroom units with kitchenette $75, $85, $95, Plus $11 for each extra Adult over 2

ROOMS WILL ONLY BE HELD UNTIL 31ST SEPTEMBER, 05 – AFTER THAT IT'S POT LUCK

Weekend activities:

Friday	Dinner to be decided.
Saturday	Tour of the Guido Zucoli War Bird display at Toowoomba Airport and an opportunity afterwards to go flying in a new CT4E and/or a beautifully restored Stagger Wing. This is a day for any flying activities you may wish to undertake. Prices are $160 for the CT4E and $260 for the Stearman.
Saturday Night	Dinner on the veranda at CRAZY GALAGHER'S situated at the Wilsonton Hotel, Cnr Bridge St & Richmond Drive, Toowoomba - 7.00p.m. for 7.30 p.m. Will probably be a-la-carte menu and pay as you order. Main Meals start at around $16 with light meals cheaper
Sunday	Fly-in to Oakey Army Base (15 minute flight) with a visit to the Military Museum; then fly on to Jimbour House for lunch and wine tasting plus a tour of the grounds. This is a magnificent old mansion with wonderful gardens. Recently an outdoor Opera event was held here in the amphitheatre. (15 minute flight from Oakey – runway 800 metres east/west sealed but a bit rocky with power lines at one end and trees at the other) If you would prefer to be driven in a tour bus to these destinations and back (driving time is around ¾-1 hour each way) this can be organized for around $15 per person. The Aeroclub are having their monthly flying competition on Sunday and they have extended an invitation to any of our members who wish to participate in the competition. This starts at about 11.00 a.m. for briefing and continues through the afternoon.
Sunday Night	Barbeque at the Aero Club at Toowomba .
Friday Night	There is a highly commended Restaurant in Toowoomba called Weis's Restaurant. They have a Seafood Smorgasbord each night which is amazing. They also have a range of non-seafood dishes, not to mention salads, desserts, etc. The charge is around $55 per head. Please let me know if anyone would be interested in having dinner there on the Friday Night.

If there was enough interest, on Saturday we could arrange a guided tour with a small bus if anyone would like to have a look at some of the Heritage features and Gardens in Toowoomba. Please indicate your interest below.

Please complete the attached form and send to Lorraine Howson
Please send your deposit of $50 per person to Colleen Murray

PLEASE COMPLETE THIS FORM AND FORWARD TO LORRAINE BY 30TH SEPTEMBER, 2005!!!!!!

I/WE WILL BE ATTENDING THE FLY-IN TO TOOWOOMBA ON THE WEEKEND OF 28TH APRIL TO 30TH OCTOBER, 2005.

FULL NAME:_____

CO-PILOT'S FULL NAME:_____

NAMES OF OTHERS ATTENDING_____

WHERE ARE YOU ALL STAYING?_____

REG. NO. OF TRANSPORT_____(Aircraft/Car)

ESTIMATED DATE AND TIME OF ARRIVAL_____

ANTICIPATED DAY AND TIME OF DEPARTURE_____

FUNCTIONS YOU WILL BE ATTENDING No. OF PEOPLE ATTENDING

DINNER – Friday Night _____
MUSEUM & JOY FLIGHTS – Saturday _____
DINNER – Saturday Night – Crazy Galagher's _____
SUNDAY – Trip to Oakey & Jimbour House _____
DINNER – Sunday Night – BBQ at Aero Club _____

NUMBER INTEREST IN SATURDAY GUIDED BUS TOUR? _____

NUMBER REQUIRING BUS TRANSPORT ON SUNDAY TO OAKEY AND JIMBOUR HOUSE _____

NUMBER INTERESTED IN SEAFOOD SMORGASBORD ON ***FRIDAY NIGHT*** _____

DEPOSIT OF $50 PER PERSON REQUIRED: No. of People_____
Total At $50 per person_____

PLEASE SEND TO LORRAINE HOWSON -EMAIL LorrainEH@Stanbrokebeef.com.au
FAX 07-4697.6581
MAIL 30 Wilkie Street, Point Talburpin. Qld. 4165

AIRTOURER ASSOCIATION

REMITTANCE ADVICE

Please complete the remittance advice below and mail with your Cheque to:

Mrs. C. Murray
Airtourer Association
74 Florida Avenue,
New Lambton. NSW. 2305

*NAMES:*_____*OF*

ADDRESS:_____

will be attending the Fly-in at Toowoomba on the weekend of 29th to 31st October, 2005.

No. of people attending _____

Enclosed is my cheque for $50 per person which totals $ _____

was inadequate. In fact, during the CASA instigated Flight Manual debacle, I submited to CASA a copy of the NZ CAA Approved Flight Manual which was the appropriate Flight Manual for my aeroplane at the time. The CASA airworthiness engineer who reviewed my correspondence objected to the use of the "Standard Recovery Technique" in the AFM. I wonder what he would have to say if he was aware that his superiors approved the very same wording in the new AFMs. Nevertheless, it's time to review spinning and in particular Airtourer spinning so I have included a reprint of an original Victa report as well as some history of spinning and spin recovery techniques.

Next issue I plan to develop this theme a little more with some practical flying exercises to examine Airtourer spinning in more detail.

Once again thanks to Bill Miller for passing on some of his practical knowledge, this time on fibreglassing.

Safe Airtouring,
John O'Halloran