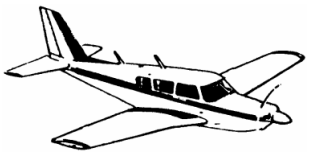


THE INTERNATIONAL COMANCHE SOCIETY
AUSTRALIAN TRIBE FLYER

Volume 11, Number 1 March 2005

TRIBE CHIEF'S REPORT

Welcome to our first Aussie Flyer for 2005. As I write this, activity in the club is really picking up after our summer break and 2005 looks like it will be another busy year for the tribe. Here's a quick update as to where our major programmes are.

Mount Gambier Fly-In: March 18-20

Our Mount Gambier fly-in is now only weeks away. This is shaping up to be a great little "week-end away" and I am particularly looking forward to welcoming two past Presidents of the ICS, John Van Bladeran and David Buttle, and their wives, to our autumn fly-in. John and David have been on a whistle-stop world tour and it will be great to hear their travel-stories (thanks to e-mail we've already seen the holiday snaps!). Details of the fly-in are on the web-site and if you intend coming but haven't yet booked, please do so as soon as possible.

Queensland Gulf-Country Flyway: June 11-18

Thanks to the efforts of Nigel Wettenhall & Fred Morgan, we have just about finalised the details of our June fly-away to the Gulf of Carpentaria. We will meet at Bedourie on the Saturday then fly via Mount Isa to Adels Grove on the Sunday. That afternoon we will visit the Riversleigh Fossil fields, and then spend Monday relaxing at Lawn Hill Gorge. On Tuesday we take a short hop across to Sweers Island for 2 days of fishing - then it's off to the Undarra Lava tubes for a day and half of exploring. Organised activities finish after breakfast on the Saturday morning giving you the choice of either flying home in time for Monday or continuing with a side trip to Cairns, Cooktown, the Whitsundays or whatever takes your fancy. Details of the fly-away are in this flyer and can also be found on the web site. We are limited to about 12 aircraft (due to parking at Sweers) so register early.

Comanche Pilot Proficiency Programme: July 23 & 24

Work has commenced on the next version of the Pilot Proficiency programme which is scheduled for July 23 and 24 at Deniliquin. This is not a small activity as it requires us to create an entirely new course from scratch. Lawrence Paratz & I spent an initial weekend on this in early February but we have only just scratched the surface. A key task is to build a portable undercarriage simulator which for the first time will allow us to practice the emergency extension procedure without needing to put a Comanche on-jacks. This will be especially valuable to new Comanche pilots.

2006 Convention

Preparations for our 2006 convention on Hamilton Island are continuing at a good pace. Fred Morgan, Manfred Melloh and Roy Sneesby are attending the Sun'N'Fun fly-in at Lakeland in Florida in early April. Dave Pratt from Aviation Performance Products runs a de-facto ICS-tent at the air show and Fred is organising a video display of Australiana to drum up interest from our American members.

In the meantime, John Moore has arranged for our convention brochure to be mailed out with the International Flyer to all ICS members. The flyers have been sent and I expect to see it in either the March or April edition. This should generate a lot of interest.

Australian Tribe Web Site

Tony Read now has control of the source code for the Australian Tribe web-site www.comancheflyer.com.au and has given it a real face-lift. As well as having all of our flyers available for download, Tony has also added the 2006 Convention Brochure and a Classified Advertising section. The latter is available for our members to advertise Comanche-related items. Three PA30's are already listed for sale. If you haven't checked out the site lately, I urge you to do so and to keep checking back on a regular basis. Tony is doing a really great job and my special thanks go to him for his efforts on the site.

And a Few Other things …….

Aviation Security: This is also turning out to be quite a big year for General Aviation here in Australia. In early March the requirements of the new Aviation Security Legislation will start to take effect. The immediate impact is that we must secure our aircraft whenever they are unattended. I have seen some novel solutions for this and there are some good examples on the AOPA web site on how this can be done cheaply (www.aopa.com.au). Most of our PA24's (all except the C-models) are particularly easy to secure as they have a 'push-pull' mixture control. A simple stainless steel U-section and two pad-locks will be enough to satisfy the security-mafia. C-model singles and Twins are a little more difficult.

Not so obvious in the legislation is the setting of a deadline for the issue of a photographic pilot identity card and photo-licence to ALL PILOTS by December 31 this year. This requires not only a terrorist-check but a criminality-check to be performed prior to issue. Given that there are some 35,000 pilots in the country this will be quite an undertaking. I only hope we don't get to January 1, 2006 and find that a lot of us cannot fly legally because CASA and the Security Services could not process our applications in time. If you have access to an MP I suggest you make that observation to them. I also hope that we will not be charged for this new license but I suspect that we will be asked to contribute most of the cost.

Airservices HF upgrade: One of the (dis)advantages of my job is the weekly commute to/from Canberra. However, it does have its upsides. While waiting (and drinking scotch) in the Qantas Club last Friday evening I met Stephen Prasser, the Airservices Australia project manager responsible for the HF network upgrade. This project is just about complete and should bring about a significant improvement in the quality and reliability of HF communications for those of us who still use HF. The new base stations have dual transmitter/receivers and new "all aspect" antennas compared to the single transmitter/receiver and "directional" antennas of the old network. Together with some "digital smarts" this will mean that the Airservices controller will always receive from and transmit to us on the "best" node in the network – something that often didn't happen. The new antennas should also eliminate many of the "no signal coverage" spots as well. I now have a much greater appreciation of something that was only a NOTAM to me before.

CASA Part 47: Given the November 15 deadline I trust that by now you have all submitted your Change of Registration forms for the new Part 47 Aircraft Register. My application was submitted very early on and I am yet to have it processed. And mine is the simplest transition case – no companies involved. So, I strongly suggest you get this paperwork in early as CASA must have

completed processing your application by November 15 or you will be flying an unregistered (and therefore uninsured) aircraft on November 16.

Well that's about enough of my ramblings for now. Tomorrow its back to my 100 hourly on TON – there are 2 new tires to fit and a myriad of little "fix-ups" as well. It never stops but the reward, a reliably running Twin Comanche, is worth the effort. (at least that's what I keep telling myself anyway!).

See you in Mount Gambier and don't forget to fly safely.

Ken Holdsworth.

EDITOR'S REPORT

Keep the articles coming. We still have not received a "Right seat" ladies story. We need more members' articles, panel photographs and any Comanche stories worthy of publication.

To facilitate the distribution of the flyer please notify any changes regarding your email address or postage address to Irene Lawson at ianirene@internode.on.net or tel (03) 9798-3389.

I would like to take this opportunity to thank Darren Lawson, Irene's son, who initially set up our web site. On behalf of the Australian Comanche Tribe – Thanks Darren.

Browse through the web site and have a look at the recent changes. We are trying to make it more interesting all the time.

Tony Read

== Coming Events ==

March 18-20 2005	Autumn Fly-In	Mt Gambier
June 11-18 2005	Northern Safari	Queensland Gulf-Country
July 23rd & 24th 2005	Pilot Proficiency Programme (New version)	Deniliquin
September 2005	Spring Fly-In	Coonabarabran
November 2005	Pilot Proficiency	Deniliquin
March 2006	Local 1-day Fly-In Lunches	TBA
June 2006	Pilot Proficiency	Deniliquin
August 6-11 2006	International Convention	Hamilton Island

MOUNT GAMBIER FLY-IN 18,19,20th MARCH

Our autumn fly-in at Mount Gambier is fast approaching and will be held on the weekend of 18-19-20 March, 2005. Book now or you may miss out !!!!!

The weekend will be low key and relaxed with a river cruise and dinner on Friday night, a relaxed Saturday morning of doing your own thing, followed by a sightseeing tour and steakhouse dinner on Saturday night. We have block booked 20 rooms at the Commodore motel and have reserved the only large boat in Mount Gambier for our sightseeing.

Itinerary:

Friday 18th March

Arrive at MTG 1500 onwards, transfers to motel with 1830 departure for Nelson for the river cruise with dinner on board the boat.

Saturday 19th March

Rest and free play in the morning

Lunch and bus tour of local sights including the Blue Lake. Then return to Motel to prepare for dinner.

Bus departs 1830 for "the Barn" steakhouse 10k out of town for dinner.

Sunday 20th March

Tribe meeting at Motel followed by bus to the airport for 1100 departure.

Costs:

Motel is $60.00/head bed and breakfast with a single supplement of $25.00.

Remainder of programme is expected to be around $100 per person which will cover transport, Friday & Saturday dinners and Saturday afternoon touring..

Booking:

1. Contact the Commodore Motel (1 Jubilee Highway East, Mount Gambier SA 5290) direct to make your reservation (don't forget to tell them you are with the ICS group booking). Phone: 08 8724 6400.
2. Register with either Nigel Wettenhall (0427 362 428) or Ken Holdsworth (0427 722821).

NORTHERN SAFARI JUNE 11 TO 18, 2005

Pack your swags, dust off the maps and grab your cameras, the Tribe is going walkabout again. Taking advantage of the June public holiday weekend we have organised an 8 day fly-away through outback Queensland and into the Gulf Country.

We will meet at BEDOURIE on Saturday the 11th of June. Why Bedourie you ask – well everyone else goes via Birdsville so – just to be different we'll meet at Bedourie and after over-nighting in the motel there, will head out on Sunday via Mount Isa to ADELS GROVE. This will allow us to visit the RIVERSLEIGH fossil fields (on Sunday afternoon) and spend all day Monday at the fabulous LAWN HILL GORGE. Whatever else we do on this safari; these two locations are worth the entire trip!

On Tuesday the 14th, we fire up the Comanche's again for the short flight to SWEERS ISLAND in the Gulf of Carpentaria and just north-west of Burketown for 2 days of fishing, boating and relaxing. Then on Thursday morning we travel east via NORMANTON to UNDARRA for 2 days of exploring the lava tubes and surrounding areas.

Our tour finishes at Undarra on the Saturday morning, allowing you to either head directly home in time for work on Monday morning, or else to pick your own destination on the Queensland Coast (Cooktown, Cairns, the Whitsundays, Great Keppel, the Gold Coast …..) to holiday at as you return home. June is the perfect time of year to beat the southern cold by holidaying in the Sunshine State.

Due to parking and accommodation at Sweers (there is space for only 12 or so aircraft and about 25 persons) this tour is only open to a select group of Comanche enthusiasts on a firsts come, first served basis. Cost for the tour is $1300 per person (twin share) or $1400 (with single supplement). This amount covers all accommodation, tours and primary meals (breakfast, lunch and dinner each day) and will be payable no later than 30 days prior to our trip (we have to prepay accommodation you see …)

If you are interested, please call or e-mail Ken Holdsworth (0427 722821 or kenhold@netspace.net.au). If this flyaway is even half as good as the last one, it will be a blast.

FLYING ARTICLE

An article on the FAA Web site entitled "Flying Light Twins" is said to be the best article on the subject many have seen. It can be viewed at the following address http://www.faa.gov/fsdo/fll/FlyingLightTwins.pdf and is recommended reading for Twin drivers. The article is a little too long to reproduce here.

TECHNICAL ARTICLE

Care and Maintenance of Your Comanche Braking System
by
Roy Sneesby – Technical Director

The braking systems of an aircraft are often sadly in neglect. A syndrome of out of sight out of mind, or due to a lack of ability or knowledge on the part of the operator. Any small defect is a message that a major fault or catastrophe is on the way. Do not wait for your engineer to notify you or until the next service to rectify any faults as the fault may manifest itself at some inopportune time.

Keep your system clean and the reservoir topped up to the prescribed level. Do not overfill, as there is a particular reason for this. Due to the small capacity of the system one emergency stop generates considerable heat, a lot of which is absorbed by the brake fluid, which in turn expands and takes up the allotted space left in the reservoir. Therefore, too full a system will cause an overflow situation; conversely if the system is allowed to operate with too little fluid, contraction of the fluid will allow air to enter the braking system. In normal operations, you will have to keep topping up the fluid level due to wear of the brake linings and the resultant changing position of the brake calliper pistons. Wear on the brake disks has also to be taken into consideration.

Since inception the Comanche has been fitted with three different types of braking systems. First models (i.e. 180 and 250) used a single hand brake lever protruding from beneath the instrument panel, which was connected by a cable to a single master cylinder beneath the floor, which operated both brakes in unison. There was no differential braking to assist directional control. The park brake lock was an independent unit mounted beneath the floor and operated by a single Bowden cable.

This system was lacking in several areas i.e.:

1. Ease of inspection for leaks in the systems;
2. If one brake cylinder seal failed, there were no brakes at all; and
3. If one wheel brake was more efficient than the other, directional control was affected.

Following this, toe brakes were installed to the pilot's rudder pedals which operated the wheel brakes independently. These master cylinders also incorporated an integral hand brake lock, which also was controlled by a Bowden cable. Earlier production series incorporated the central handbrake level, which was removed in the later series.

This newer system allowed for better control due to the differential operation. Unfortunately, due to more sophistication and smaller moving parts it was prone to leaks if not serviced or maintained correctly. I have witnessed many that have suffered abuse and incorrect assembly in their previous lives.

A common fault is wear on the brake locking pin and plate. This safety device is intended to preclude the inadvertent application of the brake lock while the brakes are off. If this system is worn or mal adjusted and the brake lock is inadvertently applied, the next time you apply the toe pedals you have a beautiful hard pedal feel but no braking effect whatsoever. In fact the aircraft seems to accelerate alarmingly! The manufacturer's intention was, with the park brakes off, that the levers engaged on a square shouldered pin, which precluded the lever from moving. To operate the brake lock, pedal pressure is applied which in turn causes the park brake lever and shaft to compress a spring and move sideways, thus disengaging the lock pin and allowing the lever to turn when the cable is pulled. This operation requires two separate and distinct movements on the part of the operator. If this is not accomplished, accelerated wear on the locking system occurs. If the system is operating correctly, the brake lock cable should not be moved to the locked position until brake pressure is applied by the foot pedals.

Later series of the Comanche could be purchased or fitted with co-pilot toe brakes in series with the corresponding system used on the pilot's pedals, except that the co-pilot's brake cylinders did not incorporate the brake lock lever. Because the system was in series the park brake lever on the pilot's cylinders attended to this act.

The incorporation of co-pilot's brakes introduced some further complication as to increased maintenance and to bleeding the air from the system after servicing. The service manual does not cover this procedure in any great detail. More often than not, after bleeding the system the pilot has good brakes and the co-pilot little or none. Other times you can get mediocre brakes on both sides, but a gradual degradation in performance on either side after a short period of time. This series of events is due to air being introduced to the system via a leak, failure to completely eradicate air during the bleeding process, or incorrect assembly of the components. If after servicing and bleeding, and you are confident all air is evacuated, you find that all pedals have a good hard feel except one, check that the main piston has not been inverted on assembly and that the nylon seal is in place.

Spongy brake feel can also be caused from other regions of the system after servicing, such as defective brake disk surfaces, flexing brake callipers and hoses, bent brake plates, and carelessly fitted brake linings. The brake system has a very small amount of fluid displacement and any of these faults

can affect the pedal feel. I have seen cases where new linings were fitted and the rivets were set so hard that the linings were distorted between the rivet spacings causing the lining to buckle and not sit flush with the backing plate. As the brakes were applied, the system first had to compress the lining to the backing plate before coming up against any resistance, thus giving a soft pedal feel.

It should be obvious that there is more to the braking system than just pushing the pedals and coming to a stop.

YOUR PANEL

This section is available for a different panel to be shown each edition.

As we have not received a photograph of a Comanche from anybody we have inserted a photograph taken through Perspex of a similar aircraft starting with C, a Concord panel, taken at the Fleet Air Arm Museum in Yeovil, UK.

Please send us a picture of your panel for subsequent flyers.

MEMBERS ARTICLE

Recently: Jim Davis asked the ICS to provide technical comment on the following true story that was submitted to a flying magazine here in Australia. While the technical details of the incident are a bit sketchy, we used the opportunity to give Jim some technical background on the Comanche fuel system and how it may have played a part in this incident.

My True Story
By Ian Clark

I started my flying training about four years ago, 22 January 2000. I'd been given an introductory flight for Christmas and I was raring to go. I will never forget my first flight in that little single engine, twin seater Grob 155. It looked so basic, yet everything seemed so complicated. The radio calls sounded like gobbledygook. How would I ever be able to master all this. Anyway, after two years of on again, off again weekend flying, I passed my PPL in April 2002. During my training I flew a range of aircraft including Trinidads and Tobagos, Piper's Dakota and Warrior, a Citabria (a fun tail dragger) and, of course, the venerable old Grob 155. By the time I finished my PPL, I had over 80 hours up, and my constant speed unit, retractable, and tail wheel endorsements. Shortly afterwards, I bought an interest in a very nice little Piper Archer II. The flying bug was still strong and I was mad keen on doing a trip to either the Great Barrier Reef or Tasmania. To do this, I needed more speed. The Archer is great but, at 115 knots, a tad slow. It also only has one engine!

I needed to do my Twin endorsement so I signed up for the eight odd hours of training with Rob Marshall from Curtis Aviation at Camden. Curtis had just bought a rather nice Piper Twin Comanche BC, call sign Echo-Foxtrot-Sierra. A lovely little four seater with 160 horses on each wing. With a comfort cruise speed of 160, it was the perfect plane for me. I started my twin endorsement and two months later I'd finished. The next day after I was heading off on my first solo cross-country nav in the Comanche – a trip up the coast from Camden to Grafton and back. With eight hours under my belt, I was feeling comfortable as pilot in command. I was confident I could handle all the things I had learned about engine failure, asymmetric flight and VMC. I was converted to twins. Apart from the obvious attractions (safety and speed), the thing I really liked was the handling. The plane, being heavier, seemed to just punch its way through the air. I spent the night before doing my pre-flight planning. I planned the route up the coast, past Williamstown, over Port Macquarie and Coffs Harbour (Class D airspace in the days before the National Airspace System), and onto Grafton after a brief scenic flight over Wooli, our destination for the night.

The Comanche has three tanks per wing – main, auxiliary and tip. When fully fuelled, the Comanche has just on six and a half hours of endurance. My flight plan calculation was two hours and twenty minutes up and slightly less coming back. All up just under four and a half hour of flying, giving me a healthy safety margin.

We arrived at Camden mid-morning to find the plane all fuelled and ready to go. I did my usual walk around. Everything was in order, including all six fuel tanks which were full. I noticed when I took the caps off to check the tanks, they were very tight. Unconcerned, I re-tightened them as tightly as I could. During the run-up magneto test, the starboard engine misfired. Usually the sign of a fouled plug. I taxied back to the apron, where my instructor ran the engine up harder and leaner, and the plug cleared. I taxied back to the run-up bays and finished my checks. Everything was now okay, although I had spent an extra 10 to 15 minutes getting airborne. We taxied to the holding point and I gave the call "EFS Twin Comanche, ready runway 24 for upwind departure for Grafton, 2 POB, with Bravo". "Cleared for take-off" came the response and before we knew it we were purring over Parramatta and onto Patonga. I love flying. I was busy making sure everything was running smoothly, paying careful

attention to my fuel management. Take-off on the mains, run up the coast to Willy on the auxiliaries before switching to the tips. I would then cruise on the tips until they were exhausted (or as close to it as I was prepared to go without running the tanks dry). Switching back to the mains for the scenic flight around Wooli and then onto a perfect landing at Grafton. The flight up the coast was sensational and mainly uneventful. We received clearance to transit Coff's airspace, had a few orbits around Wooli before heading inland, arriving safely at Grafton in time for lunch. After landing, and shutting and tying down, I dipped all the tanks to check my fuel consumption. Everything seemed in order. There was slightly less fuel in the starboard main tank than planned. However, I was expecting this given the prolonged runs-up at Camden.

After an overnight stop in Wooli (highly recommended) and an exceptionally mediocre meal at Harry's No 1 Chinese Restaurant (not recommended), we headed back to Sydney. During my pre-flight inspection, I once again dipped the tanks "just to be sure". I had calculated that we had sufficient fuel to cruise on the auxiliary tanks for 35 minutes, before switching to the main tanks for the run back to Camden. We took-off, departed overhead the field and headed east for the coast. After climbing to our cruising altitude of 5,500 for the trip home, I switched to the auxiliary tanks. Brisbane Centre cleared our transit through Coffs, 1 km offshore. 20 minutes after switching to the auxiliary tanks, my passenger let me know that the door was not properly closed. No need to panic! Just as we were figuring out how to secure the door, the Comanche yawed violently to the right and started to roll towards the sea.

My heart was in my mouth.

My starboard engine had stopped. Momentarily my mind went into denial ("There was still 15 minutes of fuel left. Wasn't there?"). Luckily, Rob's training had sunk in – "control the yaw with rudder, power up both engines, clean up the airframe (flaps and gear), identify the failed engine (dead leg, dead engine), confirm with throttle, and check for the problem. Once I had regained straight and level flight, and identified and confirmed the starboard engine as off, I switched to the main tanks and flipped on the fuel pumps. Almost instantly, the engine roared back in to life – and my heart started to beat a little slower. All that happened in what seemed like a lifetime. In reality, it lasted no more than a few seconds. Once we were back on track, I checked my fuel calculations. I assumed that I must have misread the fuel in the starboard auxiliary tank when I dipped the tanks before take-off. Anyway, dipping tanks is hardly a precise measurement. Is it? We had enough fuel in the main tanks to get home safely, and that is what happened. We landed at Camden with 80 minutes of fuel to spare.

So what happened?

After landing, I notice a blue stain running down the right wing behind the starboard auxiliary tank. It was Avgas. I checked with the guys at Curtis and the LAME. It turned out that I had not screwed the starboard auxiliary fuel cap back on tightly enough. At Grafton, I had tightened the cap only finger tight, which was not sufficient. As a result, when I switched to the auxiliary tanks for the trip back, I started to vent fuel. 15 minutes worth, as it turns out.

So, what lessons did I learn from all this?

Firstly, I should have checked that the door was correctly latched, rather than giving it a cursory glance and assuming that my passenger had shut it properly.

Secondly, I should have trusted my fuel calculations and realised something was wrong. I naively assumed that I had not dipped the tanks correctly at Grafton or had made an error calculating my fuel consumption. A complicating factor was that I could not see the auxiliary fuel tanks and the leaking fuel. They are hidden by the engines when you in the cockpit.

Thirdly, I should have been monitoring my fuel tank gauges with more frequency. My excuse here is that I have been taught that these tend to be inaccurate and should not necessarily be relied on for fuel management.

Fourthly, I probably should have landed at Port Macquarie or Coffs Harbour to see what had happened. For all I knew, the other fuel caps were also not correctly secured and I was venting fuel from the other tanks. I did monitor my fuel gauges with more diligence on the flight back to Camden than I had on the flight up to Grafton.

And, lastly, I should have better understood the caps on the fuel tanks. Although, I had flown the Comanche on at least five occasions before my flight to Grafton, I had never refuelled the plane on my own. The fact that I managed to secure the caps correctly in Camden was merely good luck rather than good airmanship.

ICS Australian Tribe Commentary

Jim,

Thank you very much for providing our club with the opportunity to comment on this incident. Unfortunately there appears to be insufficient detail in the account for us to ascertain the exact causes of this incident. We therefore find it difficult to identify any definite safety message, either type specific or generic, from the account.

That said, there are some observations that we would like to make.

Firstly, since the author talks about "screwing" the caps tight, we assume that EFS had the after-market (and much improved) "thermos" type fuel caps. These are recommended as it is easier to ensure that there is a good seal and unlike the lever-type caps there is no hollow in the centre of the cap to trap water which can work its way down into the tank. These caps are also deeper than original, which also assists in reducing water ingress to the aux tanks.

Given the depth of these caps, and assuming that the access door is closed, it is unlikely that the caps will have been "sucked up" high enough to allow a sufficient quantity of fuel to escape in 30 minutes or so available from departure from Grafton to have caused the starvation. Assuming that the 15 missing minutes of fuel was calculated at 75% best power or 38 litres per hour, then some 9.5 litres of fuel must have been lost in half an hour. Experience shows that this is unlikely and while a small amount of fuel was lost, and therefore provided the evidence on the wing, it was probably not the cause.

There are three main reasons why you may not get as many "minutes" of fuel out of a Comanche bladder tank than you expect:

- Fuel consumption is not what you have planned
- The tank holds less than you expect
- You are not burning the fuel from where you think!

Fuel Consumption Rate. It is interesting to note that the author talked only of how many "minutes of fuel" in each tank, not how many litres. The amount of time in a tank is determined by the consumption rate, which depends upon the percent of power being produced by the engine and the mixture setting. The following table shows the large variation that can occur (2400 RPM, 54 litres useable) for the IO-320 in a Twin Comanche:

%Power	Leaning	USG	Lph	Minutes
75%	Best Power	10	37.9	85.6
	Best Economy	8.6	32.6	99.5
65%	Best Economy	7.6	28.8	112.6
55%	Best Economy	6.9	26.1	124.0
45%	Best Economy	5.8	22.0	147.6

Fuel management should therefore be based upon how many litres remain and the current fuel burn rate, not a generic number of minutes. To do this you must use known power and mixture settings to calculate the burn and therefore the time remaining. It is conceivable that this "low time" twin Comanche pilot could have been burning more fuel than he was expecting and thus "ran out early". His comment that the Twin Comanche has "6 and a half hours endurance" is a pointer, as this is based on somewhere near 65% best power or a typical 8000ft max cruise configuration. This flight was at 5500ft and below, so you would expect a higher rate of consumption to have occurred. He may not also have leaned the mixture to obtain the "planned" consumption.

The tank holds less than you expect. There are a number of traps with the bladder type tanks in Comanches (and other types) which can lead to them holding less fuel than you would expect:

- Firstly, the tanks can shrink with old age and so hold 1 or 2 litres less than rated capacity.
- Secondly, some of the clips that hold the tanks to the top of the wing could have slipped out, allowing the tank to sag down and hold less fuel. This is a common fault and can only be spotted by checking the fuel added against the expected fuel used at each filling.
- Finally, if the tanks are filled only to the bottom of the filler neck then you will lose 6 or 7 litres of fuel. Refuellers unfamiliar with the Comanche series have a habit of leaving out those last 5 litres. This is quite an issue when it is repeated across 6 tanks!

Fuel Transference. Two type specific problems can occur on Twin Comanches and both are maintenance faults. It is not uncommon for worn fuel valves in Twin Comanches to allow fuel to drain between tanks, usually aux to main because of the dihedral of the wing. Many owners first find out about this when they fill their aircraft and then leave them overnight. They return and find that 5 or 6 litres has drained from main to aux and then out through the overflow.

The same fault can also allow for fuel to be drawn from both main and aux tanks when the mains are selected. There is an AD that should be performed at each 100 hourly inspection to check the fuel selector for this problem. Early identification of the fault is best achieved by matching fuel added to each tank, against the expected fuel burn, at each fill of the aircraft.

Finally (although this appears not to be the case in this incident) a tip tank solenoid can jam and you will burn fuel from the aux tank and not the tip that you have selected. To use a PA30 tip tank you first select the AUX tank and then operate a switch to activate a solenoid valve. The same switch also changes the fuel quantity gauge to show the tip tank fuel. When you pre-flight a Twin Comanche you should operate the tip tank switch and listen for the click of the solenoids (which are on the front of the main spar). Then, when you switch to the tips you must check that fuel is actually being burned from the tips (the fuel quantity starts to fall). If the solenoid stuck (maybe for 15 minutes or so on the way to Grafton) then this pilot may well have burned fuel from the aux instead of the tip – so he had the same amount of fuel on board – it just wasn't where he thought it was!

Of course there is an even simpler explanation. He or his passenger could have accidentally kicked the tip tank switch (which is on the floor and unguarded) and instead of drawing fuel from the aux he was drawing from an empty tip!

Conclusion

As you can see there are quite a number of possibilities in this incident and unfortunately, not enough detail to positively identify what actually happened. We would not be surprised if a number of factors were involved.

Each of the above issues should be included in a thorough endorsement on the type. We would also caution him against assuming that he can achieve maximum endurance from any aircraft (particularly a 30 year old rental) until he is experienced with the vagaries of that particular aircraft. It illustrates that the basic endorsement is just that – the basics, and that there is much more to learn before you are really proficient in a type for extended cross-country operations.

The International Comanche Society runs pilot proficiency programmes in which these (and other operational) issues are covered. The goal is to increase safety and flying enjoyment through sharing knowledge that will allow issues like the one this pilot faced, to be avoided. The registrar for these courses in Australia is Manfred Melloh (02 94562719) who can advise the date for the next course or arrange for a session with a faculty member.

Finally we would agree with the pilot's analysis that, given the availability of suitable landing places, he should have landed once he was unsure of what was happening mechanically with his aircraft. Remember the old saying "it is better to be on the ground wishing you were up in the air, rather than being up in the air, wishing you were on the ground!"

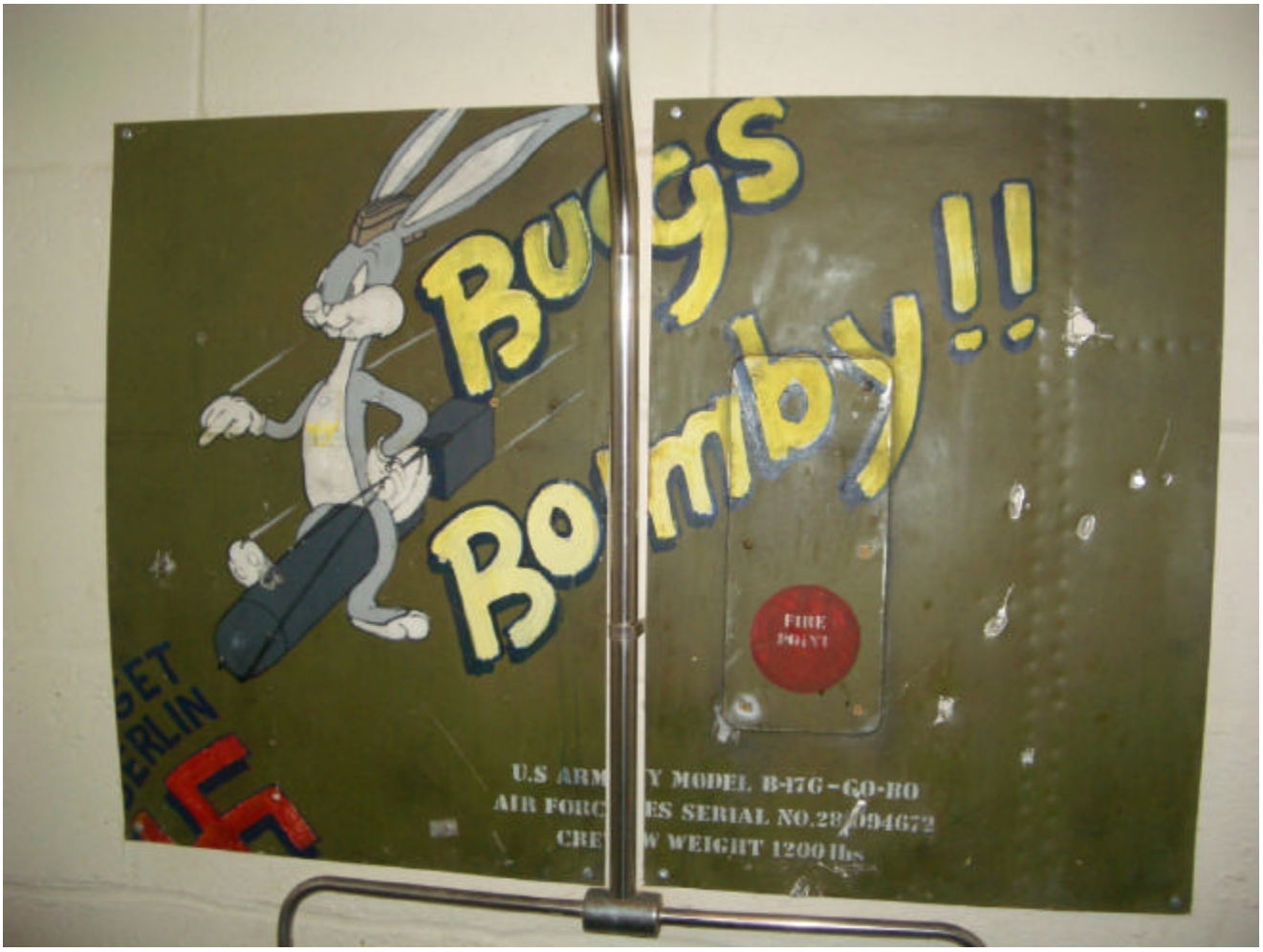
ICS Australian Tribe

2006 INTERNATIONAL CONVENTION

Remember August 6th 2006. Spread the word.

See brochure on web page in adobe format.

Fun Bit



I don't normally take photographs in toilets but this is a picture of a World War 11 nose piece from a B-17 displayed on the toilet wall at a London airstrip called North Wald.

Members Advertisements

VH-PYP	Twin Comanche
PA30B	TTIS 6255
Port Engine	TSO 985
Starboard Engine	TSO 1738
Port Propeller	TTR 1870
Starboard	TTR 1870

One owner last 11 years
IFR
Alternators
Tip tanks
Lambswool seat covers
6 seats
S Tec 50 auto pilot
A solid cross country machine
Reluctantly for sale because the family has grown and have bought a larger aircraft.
Phone Roland Schmelzer 0746635204 for details.

FOR SALE
PA30B VH-SLP
1966 model Twin Comanche

Total hours:	4450 hrs.
Engines:	1400 to run. Both last overhauled Nov 1997.
	New Zeftronics regulators fitted (Dec 2004).
Props:	1820 and 1440 to run. (Overhauled governor fitted Dec. 2004)
Radios:	KY97A VHF comm.
	KLN – 90B GPS; KI 206 indicator and annunciator
	Garmin 340 Transponder with AK-350 encoder
	KX-155 Nav/Com
	2 x KR-87 ADF (one indicator)
	KMA – 24 Audio
	HF and ELT
	Century III Autopilot (extensive overhaul Dec. 2004)
	Electric Trim
Interior:	New headlining & re-upholstery 2002
Exterior:	Repainted June, 2000
	Always hangared
Fuel:	Mains, auxiliaries & tip tanks
Price:	$145,000 plus GST

Contact Chris Kinnane on 0408 55 44 90 or (03) 58 521 522

FOR SALE
VH-EQM

Aircraft Type:	PA30-160B Twin Comanche	
Year:	1966	
Series:	30-1300	
Serial Number:	1350	
Total Hrs:	4470 (approx)	
L/R Em:	1006 (approx)	
L/R props TR:	1640 (approx) on new Q-tip props, very fast flat-rated aircraft at 165kts @ 75%	
Interior/Exterior:	8/10 -very well presented with new all-metal panel, new switch panels, and hangared the past 20yrs.	
Exterior Paints:	White with red and blue.	
Interior Details:	Camel velour. New trim all around, new carpets.	
Autopilot:	Piper Altimatic111b with altitude hold.	
MTOW:	37251bs.	
BEW:	2498	
Avionics:	Narco Com 120	Narco Com 120
	Narco Nav 122	Narco Markers
	Narco CP135 Audio	Narco ADF 141
	Narco AT150 Txp	Narco ACK A30 Encoder
	ASB 125 HP	Apollo 2001 GPS
Extras:	Electric trim, Mains+Aux+Tips, static wicks, 2nd altimeter, PTT switch 4 place intercom, rams hornyokes, dual brakes, autopilot coupled to ADF, 5d1 + 6d1 seats, CHT gauges, VDO and F/S meters, fIre ext, new placards, updated instruments.	
Comments:	The Twin Comanche is regarded as a "pilot's aircraft" and is possibly the best light twin ever made by Piper. EQM has recently had $55,000 worth of extensive maintenance and modifications, making it a very fast and well-presented aircraft with all AD's being up-to-date.	
Price:	$110,000 as is (+GST) with fresh 100hrly for immediate sale (or $125,000 with repaired wing).	

CONTACT ANNA SIMONSEN 0423-555-722 OR 03-98890050

AUSTRALIAN ICS OFFICE HOLDERS – 2003/2004

TRIBE CHIEF

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kenhold@netspace.net.au

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Ph. 03 9598 3320
Fax: 03 9598 2943
TonyAng@bigpond.net.au

The ICS is an AOPA Affiliate – Membership number 44083.

International Comanche Society
Australian Tribe

MEMBERSHIP APPLICATION

NAME:_____

ADDRESS:_____
_____
_____
_____

POSTCODE: _____

PHONE:

HOME: _____

WORK:_____

MOBILE:_____

FAX: _____

E-MAIL:_____

SPOUSE/PARTNER'S NAME:

_____

Please find enclosed our / my cheque / money order for $160.00 being for one(1) year's subscription to the International Comanche Society's own magazine: "The Comanche Flyer".

All monies are to be made payable to "The International Comanche Society" and mailed to The Treasurer, International Comanche Society.

We / I understand both the Australian and American International Comanche Societies are Incorporated bodies.

To help us maintain our Australian Register, we offer the following information:

Aircraft Type & Model: PA - _____

Registration: VH- _____

Serial Number: _____
Year of Manufacture: _____
Previous Owner and Address (if known):
_____
_____
_____