



Doncaster Aeromodellers

www.dac.org.au

Newsletter

November 2002

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Correspondence

The Secretary DAC
PO Box 56
North Balwyn
3104

Fun Flying Day

Sunday 15th December.
10:00am sharp start.
Events for all comers
(electric and IC, novice
to expert).

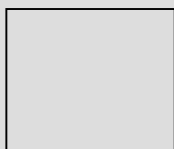
Followed by BBQ at
12:30pm

Next Meeting

Monday, November 18
8pm at the Clubhouse

MAAA Sticker

Here only if you need one
(see additional insurance
in the right hand panel) –
attach to MAAA
membership card



Assistance still needed

The committee still needs volunteers to help in three areas:

- Web site content from Interest Groups (F3A Aerobatics and Electric well covered, others need help);
- A newsletter content management and publishing assistant (or leader!) to keep on spicing up this publication;
- A notice board minder or manager to use some of the web content to keep the club notice board fresher and more topical than it currently is.

Please volunteer loudly to any of the Committee if you can pick up one of these roles.

Have you paid your additional insurance?

Since the June membership renewal there have been two increases in MAAA insurance premiums:

- \$13.50 through insurance premiums for this year being higher than the quotes the MAAA had received when they set their fees; and
- \$10.00 for the addition of member-to-member cover.

To ease the administration and policing burden, and in good faith, the club has paid these on behalf of all members whose insurance is through DAC. And if you needed to pay the additional member-to-member cover through DAC we attach the pink sticker you must attach to your MAAA membership card to signify you are covered.

That done, our records for you indicate:

- You still owe additional insurance* \$
- You have paid all additional insurance
- You joined after the changes so don't need to worry

The onus is now on each of you to make sure you have paid any additional sums to the club by December 31, 2002. Any members who have not paid by this date will not be permitted to fly.

Payments can be sent by cheque to:

The Registrar DAC
PO Box 56
North Balwyn 3104

*Graham Kay has done his best to keep track of a complex administration task – if you think our database records are in error please contact Graham directly (with receipt numbers for payments not recorded)

President's Corner

It is that windy time of the year again. Not always fun at DAC, particularly with those North Westerlies, but I gather there has been some great slope soaring by some of our members at other locations. For the rest of us it is hopefully a good time for building and we will see the fruits of that in new models appearing over the coming months.

Despite the weather we have seen many potential and new members down at the field, ranging from the highly experienced that have taken a decade or so out of flying, through to first timers. And it is encouraging to see that many are taking the time to build models from kits rather than take the ARF route. We have about 8 under instruction on the IC power side at present and this does raise a small issue of the load it places on our dedicated but very small group of instructors (primarily Cliff McIver and Graham Kay at present). This created a worst case of 7 students and one instructor a couple of weeks back! To address this we are working, amongst other things, on a 'buddy' system between the licensed instructors and some of the more experienced pilots to help the novices get more stick time. If you are one of those more experienced pilots and Cliff or Graham asks for your help — please make the time.

It is also a very exciting time for the electric powered enthusiasts within the club with developments across planes, batteries and motors. On the plane side developments range from some of the small ARF aerobatic models (such as the Sukhoi's and Tangent's regularly appearing) through to projects on much larger electric powered models that are mentioned in the Electric update section of this Newsletter and our web site. These in turn are being powered by a very rapidly evolving set of brushless electric motor, gearbox and battery combinations.

Those at the last club meeting were also treated to Neil Spencer outlining the conversion of a 1/2A Lanzo Bomber from IC power to electric — and for those that missed it Neil has been kind enough to write it up for us (elsewhere in this newsletter).

On the Committee front we continue to make good progress on our chosen initiatives. These include:

- Completing the first round of development of the web site and getting basic content into all the areas. It is now getting a steady, regular flow of traffic and appearing to get good

feedback from those who use it. The next step is to get a consistent flow of new and interesting information to keep it current and informative — that is up to each of you!

- Our application to Manningham City Council to increase the times we have 'exclusive' access to the Bulleen field has been accepted. This now covers Wednesday and Friday afternoons, and both Saturday and Sunday. The hours that IC power flying is allowed haven't changed.
- While we haven't finalised a new logo yet, we are getting closer with the help of some valuable input from Steve Teleki and his friendly graphic artist (thanks Steve).
- After a slow start (and an unexpected setback) we are making progress on the events front. The two events in planning:
 - The Christmas 'Fun Flying Day' and BBQ scheduled for December 15 at Bulleen. This is designed to involve all members (from beginner to expert) and all types of model (electric and IC based radio control, control line).
 - The 'Twin Club' flying day at Bacchus Marsh Club including both ourselves and our friends down at Geelong Model Aircraft Association (which has just been postponed from December 1 due to calendar conflicts).
- Neil Spencer has been working with John Kounelis and Bunning's Northland (John's employer) to secure us a new BBQ. Thanks to John's help and Bunning's generosity we will get this at wholesale price (and it should have taken up residence in the Clubhouse by the time you get this Newsletter).

There are also many important developments on the safety front, but I will leave Nik to outline them in his update.

That's all for now. Happy flying.

David Gibbs

TAIL ASSEMBLY - Fragile device, which has an affinity for door frames during non-flight transport

Safety Corner

Our policy of flying left to right on no wind or light wind Sundays seems to be paying off so far, with very few incidents to report. However, members are reminded not to fly over the pit area.

In anticipation of increased spectator traffic with the advent of the opening of the toilet block nearby, a few more safety signs have been made -- some for the pit area and others for the surrounding runway and control line areas, basically to warn the general public not to stray into these areas.

There is also a new sign to indicate the current flight line, and members should note the direction indicated before taxiing onto the runway.

Members are also reminded that together with the windsock and safety cones, all the safety signs should be erected in their respective locations before any flights begin.

Whilst we gladly welcome new members or prospective new members, it is imperative that these persons know the Club Safety Rules from day one, and it is important that they be briefed on the do's and don'ts as soon as they arrive at the Club.

There was an incident two weeks ago, whereby a novice was seen turning his transmitter on and off without having his key on the board, and it hadn't occurred to him that this had the potential for a disaster! Luckily, no planes on the same frequency were in operation at that time. This is an issue everyone can help with. While this is one of the first things an instructor will teach them, if you see anyone at the club who appears new or a little unsure, then offer help!

This also leads to another issue. Of late, some members have been somewhat lax in following the rules relating to transmitters. All members who do not have their frequency keys on the board should place their transmitters (making sure their switches are off) on the "transmitter pound" in the Clubhouse or in a firmly locked Transmitter case. Leaving them lying around in the Clubhouse, or loose in your field box is not acceptable.

Finally, with the windy conditions experienced over the past couple of weeks, members are reminded not to "stray" too far from the Club field whilst flying! It is difficult enough to try and do a "dead stick" landing under good conditions, without adding another dimension to the conundrum.

Nik Daud

Committee Contacts

President:

David Gibbs-- 9889 4939

Vice President:

Cliff Mclver – 9850 4478

Secretary:

Richard Page – 9882 3008

Registrar:

Graham Kay – 9842 8777

Safety Officer:

Nik Daud – 9857 6353

Committee Members:

Neil Spencer (mainly electric)

Colin Kahn (electric and scale)

David Nobes (control line)

Dennis Travassaros (sport and aerobatics)

A TRAINER - (Relatively) inexpensive throwaway device used by beginner pilots to scare instructors and spectators

Summary Minutes – 9 September 2002 Club Meeting

Member-to-Member Insurance Cover

A further \$10.00 is to be paid to the DAC Treasurer by each club member, before the end of October. This is to cover member-to-member insurance recently reinstated by the MAAA.

Themes Underpinning Club Activities for 2002/03

David Gibbs spoke to the Themes Underpinning Club Activities for 2002/03, as developed by the club committee. These were included in the last Newsletter and are on the web site.

Safety and Facilities

- 1) The revised Deed of Agreement between Manningham Council and DAC provides for exclusive use of the DAC Flying Field for model aircraft flying activities as follows:
 - 12.00 Midday to 7.00 PM on Wednesdays and Fridays
 - 10.00 AM to 7.00 PM Saturdays and Sundays

I/C Power flying is of course restricted to the times allowed by the local bylaws, as follows:

 - Wednesday Afternoons: 1.00-2.30 PM; 2.45-4.15 PM; 4.30-5.30 PM
 - Sundays (Non-Daylight Saving): 11.45-1.15 PM; 1.30-3.00 PM; 3.15-5.30 PM
 - Sundays (Daylight Saving): 10.00-11.30 AM; 11.45 AM-1.15 PM; 1.30-3.00 PM; 3.15-4.45 PM; 5.00-6.30 pm
- 2) The new toilet block raises some safety issues. There is likely to be a significant increase in general public use of the flying field perimeter and there will need to be a heightened awareness by DAC members of the associated risks and abatement strategies – read and follow the safety regulations please!
- 3) Nik Daud (Safety Officer) pointed out that the only way insurance costs can be kept in check is by minimizing the number and magnitude of claims, and to do so by flying safely.
- 4) New warning signs have been prepared for the ends of the runway and for the pits to inform the general public to stay outside designated operational areas. A Flight Direction sign is also to be used to indicate designated take-off and landing direction at any time.
- 5) Pilot briefings will be used as required to highlight any specific issues of the day.
- 6) Copies of an incident pro-forma document will be made available in the Clubhouse and must be filled out by the relevant pilot(s) in the event of any incident that may potentially lead to an insurance claim.
- 7) Club members must fly within the height limits applicable to I/C and electric/glider models. These limits are set respectively by local bylaws and CASA. If you have any doubts as to the specific limits please talk to Nik Daud who will set you straight!
- 8) The Committee has been looking at ways to reduce the workload on our qualified instructors. Discussions have centred on using our more senior pilots (next level below qualified instructor) to take over some of the load, once student pilots have reached a reasonable level of competence.
- 9) The next series of instructor qualification examinations is scheduled for 25 November at the State (Northern) Flying Field. Richard Page to check on whether all future examinations are to be held at the state field.
- 10) Cliff McIver has donated a sound level meter to the club. Thanks Cliff – much appreciated.

Summary Minutes – 9 September 2002 Club Meeting (Continued)

DAC Web Site

- 1) David Gibbs gave an overview of the web site and what is needed to continue to keep it current. Justin Leckie volunteered to assist editing the Newsletter. Thanks Justin.
- 2) Richard Page agreed to provide an edited version of meeting minutes suitable for inclusion in club Newsletters (which is why you are reading this!).
- 3) David Gibbs requested that members consider receiving their Newsletters by email, as this could significantly reduce printing and publishing costs presently incurred by the club.
- 4) The web site is currently averaging 40 hits a day.

Events

- 1) 7-Cell Update: Eleven flyers participated in the last competition held 3 weeks previous to the club meeting. 1 – David Hobby; 2 – Neil Spencer; 3 – John Kounelis.
- 2) Combined Club Fun Fly Day: A fun fly day is to be arranged with participation of DAC and the Geelong Model Aircraft Association. Probable venue will be Bacchus Marsh on first Sunday of December. Neil Spencer, Roger Peine and Richard Page to help organise (subsequently postponed)

Club Logo

An excellent response was received to the request for submission of designs for a new club logo. Discussion at the meeting resulted in the available options being reduced to a small number of acceptable alternatives. These will be further examined (core working group: Neil Spencer, Graham Kay and Cliff McIver) and a refined proposal put to the members at the next meeting.

Making Club Meetings More Interesting

Ideas were canvassed as to how to make club meetings more interesting and thus increase member participation. It was suggested that a "Show and Tell" session held after the meeting proper might help. To this end, Neil Spencer presented a 1/2A Lanzo Bomber he has successfully converted to electric R/C. The Lanzo was originally a very popular free-flight pylon "Old Timer" model powered by a Cox .08 glow engine.

Next Meeting

November 18, 2002

The meeting closed at 10:00 PM

Club Meeting

Next Club Meeting is at the **Clubhouse**:

Monday November 18, 8:00pm sharp

Agenda is likely to include:

- Safety update and discussion;
- VMAA Trophy 2003 – thinking ahead;
- Guest speaker with building project!!

Christmas BBQ & Fun Flying Day

Scheduled for **Sunday December 15**
at **10:00am sharp**

Events structured to include:

- IC and electric power;
- Novice to expert pilots;
- Fun for all

What's happening in F3A Aerobatics?

Doncaster Aeromodellers' Club boasts a wealth of pattern fliers. On any one Sunday we may see as many as 10 pattern aircraft in the pits. Spanning over all the current APA categories, it is always a treat to see the Doncaster pilots gracefully cutting through the sky indulging in their aircraft's capabilities (trying to, at least!).

Every manoeuvre, from a "Horizontal Roll" to a "Rolling Loop with One Roll (inverted entry)," is designed to increasingly test the pilot's capabilities to properly control his aircraft. In order to achieve this (and many of us still struggle immensely) the secret is to practice, practice again, continue practicing and then practice some more.

With the limited air space at Bulleen Park, an implicit "gentleman's agreement" exists amongst the pattern fliers:

- 1) We all assist each other during start up.
- 2) We fly only one at a time.
- 3) We acknowledge an implicit flying order that we follow throughout the day.

This provides for an ideal and delightful environment where we can focus on the ins, outs, ups and downs (and a few involuntary acrosses) involved in the proper practice of the F3A schedules. Ultimately, we all want to go to the competitions!

Historically, the Club has always been well represented at state and national competitions. This trend continues. In August 3/4 we saw the regular Yarrowonga competition moved to Cobram. Two club members/pilots represented Doncaster. In September 7/8, we showed up with a significant contingent for what is usually a very enjoyable competition at Geelong (Dog Rocks Road). Unfortunately, we were blown out of the sky by severe winds and as a consequence the competition was cancelled.

October 12/13 saw the APA Championship in Wagga Wagga. It was a good competition in very windy conditions. On day two the CD pulled the plug on the last round as a result of high winds. Again, two pilots represented Doncaster. Strangely, the competition had relatively low attendance for a national event.

Our next competitions are scheduled for November 10 at Nepean and December 1 at P&DARCS. Let's get some practice in and get a big team out there!

For information on results and upcoming F3A events you can visit:

www.australianpatternassociation.com.au

Fernando Monge

Club Calendar

November 18, 8:00pm, Club Meeting, Clubhouse

December 15, 10:00am, Fun Flying day and BBQ

VMAA Trophy, April 12 & 13, P&DARCS

Twin Club day – Postponed to next year

Mowing Roster

A big **thank you** to the committed group who spare a couple of hours out of their schedules every couple of months to mow the flying field, and to Graham Kay for organising them.

New volunteers always wanted – please let Graham know if you can.

* * *

Thanks to all our newsletter contributors this month: Nik Daud, David Gibbs, Neil Spencer; Fernando Monge; Paul Marlan. Contributions for the next Newsletter due by January 10 – start writing now.

What's happening in Electric

Since the last newsletter there has been a sharp increase in the use of brushless motors for both competition and general flying. Martin Lui has received a new Hacker B40-6L combined with Maxon 4.4:1 ceramic planetary gearbox. This is a very high performance combination that should turn a 14" x 9" folding prop at up to 6,000 RPM on 7 cells. As you might guess Martin is intending to use this combination for the 7-cell competition and will install it in his new Omega 2M model. Martin has also purchased one of the AXI "Outrunner" motors that has its Neodyne magnets mounted on the outer case, which rotates around the fixed armature – this is somewhat akin to the early rotary piston engines. The AXI motors are noted for their high torque, which enables large props to be driven without a gearbox. This motor is now powering Martin's "Speedy Bee" sports aerobatic model and has transformed its performance on 8-10 cells. Those of you who may have noticed a dramatic increase in performance of Martin's ME163 be advised that this model is now powered by one of the new Mega Speed 400 size brushless motors (so watch out for him in combat!!).

Brushless motors are driven by A/C current therefore their controllers are somewhat more complex (and unfortunately more expensive) than their brushed equivalents. Fortunately the new Jetti range of brushless controllers are becoming more affordable and they seem to be the controller of choice at the moment. I have just purchased a Mega AC 22/20/2 brushless motor for my 7-cell glider and it has noticeably improved its performance over the high end Trinity P94 ferrite motor that I have been using to date.

Colin Kahn has a brushless Kontronics FUN480 motor/gearbox combination in his new 2.75 M glider, which produces amazing climb performance for such a large aircraft. You can see a photo of this model in flight on the web site. Colin has also installed one of the new Mega S400 brushless motors in his scale Albatross and coupled it to a 3.3:1 MPJet gearbox. Unfortunately the first flight ended in heavy contact with mother earth following a low level loop – the good news is that Colin has repaired the damage and the model is back in the air. Late news is that Colin has succumbed to temptation and installed this motor in his ME163 – so watch out Martin!

The monthly DAC 7-cell competition was well attended again with an excellent quality field – details can be found in the competition section of the web site.

I am now flying the largest of my three Old Timers on electric power and have recently sold the smallest to Anthony Peate. I will describe the electric conversion of these models in a series of articles with the first installment in this month's Newsletter.

PS. In case you are sick of seeing the same names in this column, or you would like to see your name and model in print, please send me relevant items and photos or chew my ear at the field.

Neil Spencer

RUNWAY -- Flat object used by student pilots to walk on to retrieve aircraft, which "almost landed OK"

AEROMODELLING - the art of turning precision-cut and glued balsa wood and foam into toothpicks and confetti

FAIL SAFE -- Option on PCM radios that allows a pilot to choose whether to crash near him, or a long way away

Old Timer Electric Conversions – 1/2A Lanzo Bomber

In last month's newsletter I mentioned that I had obtained three Old Timer models for conversion to electric power. This article describes the first model to take to the air and how I went about modifying it for electric power. For those who may not be familiar with the term "Old Timer" it basically refers to free flight style models many of which were designed prior to World War 2. Typical construction is built up balsa framed fuselage and open structure wing & tail plane. Early covering materials were usually tissue or silk and dope however many models are now covered in new generation lightweight materials such as Litespan.



In case you are wondering how and why I got hold of three complete Old Timer models the story goes like this: I got hooked on the idea of owning an electric Old Timer after watching the likes of Ray Halstead, Martin Lui, Colin Kahn and Michael Lui flying their Old Timers. They always seemed to be having a ball with their models cruising around on balmy summer evenings. This often extended after dark with the help of on board lighting. Martin must have got sick of hearing me say "I must build one of these" because one afternoon an Email arrived giving details of a Trading Post add for a 1/2A Lanzo Bomber, a 70% Lanzo Bomber and a Senior Playboy at \$50 each. Now this sounded too good to be true and I had visions of dilapidated old airframes with most of the covering in tatters etc. It's a good thing that we decided to make the not insignificant trip to Powelltown as we were greeted with three well-built models in excellent condition. Enough of this trivia, lets get on with the first model which is a 1/2A Lanzo Bomber.



The little Lanzo has a 1200mm span polyhedral wing mounted on a raised fuselage pylon. As can be seen in the attached pictures construction is built up balsa fuz and open frame wings and tail plane. The model was originally set up for R/C and powered by a Cox 049 engine. I do not know the original flying weight however the model now weighs 560gms ready to fly. The original covering was heavy weight doped tissue however it had been painted with a clear polyester finish for fuel proofing which added more weight than I had expected. I am surprised that it flew well with this set up, as the CG would have been well over 50% of chord with the

little Cox 049 up front. I decided to convert this model first as I had recently bought an MPJet 3:1 Speed 400 gear box for the Old Timer that I was always wanting to build! The Lanzo is about 10% smaller than the other S400 powered Old Timers in our club. However I figured that I could run less cells to save weight and still have enough thrust from the 10 x 5 APC E-prop that I was planning to use. As it turned out the combination of 6 volt S400 motor and 6 x 600AE Sanyo nicads provides sufficient power to fly the model on relatively calm days.



Old Timer Electric Conversions – 1/2A Lanzo Bomber (Continued)

The first task was to mount some servos and this looked like being a pain given the small access panel on the side of the forward fuselage. The pull-pull control wires had also been cut to remove the original servos so I decided to remove the fuselage covering so that I had better access. This turned out to be a frustrating and time consuming job as tissue and dope stick really well to the fuselage stringers! It's amazing just how much strength this type of covering adds as the fuselage became very flexible when all the covering was removed. I had some GWS pico servos on hand and they fitted easily into the existing mountings. A trip to K-Mart for some plastic covered steel fishing trace and the elevator and rudder were



back under control. An interesting feature of this model (and its bigger brother 70% Lanzo) is that only half of the tail plane has a functional elevator – the other side is the original free flight style construction with no moving surface. At this stage I thought that elevator inputs would result in some strange rolling motions however this did not prove to be the case.

On to the front end and how to mount a Speed 400 plus gear box where a Cox 049 once resided. The front firewall (bulkhead) was 8mm ply and had probably supported the Cox motor with an integral back plate mounting. In order to get the CG somewhere near 40%

I needed to hang the gear box out well in front of the firewall however its flange mounting lugs looked to be too wide for the narrow fuselage. I pondered possible extensive modifications to the front end however a little voice kept reminding me of the KISS principal (keep it simple stupid!).

As can be seen in the photos three mounting struts were made from carbon fibre arrow shaft material and long self tapping screws pass through from the gear box lugs to the firewall. As luck would have it the original mounting holes for the undercarriage attach



points almost matched the gearbox pattern so I made use of them for both functions. A 35mm hole was made in the firewall so that the rear half of the motor could extend into the fuz. This allowed for a simple and neat connection for the speed controller. The 20 Amp ESC/BEC simply hangs in the space behind the motor and the 6 x 600AE cell battery pack is located below it on the fuselage floor immediately behind the firewall.

Old Timer Electric Conversions – 1/2A Lanzo Bomber (Continued)

I was intending to use one of the GWS indoor receivers however Martin convinced me that it would not have enough range given that these models can thermal quite well. The only other receiver that I have on hand was a Hitec 555, which would not fit in the cramped space available so I made a second access hatch behind the servos. The only thing left to do was to re-cover the fuselage, which I did using Ozcover clear as it is very light and provides an Old Timer look.

So how does it fly? Well I was so keen to give it a go that I dropped into the club on my way to work the morning after it was finished. As I did not have any appropriate wheels on hand a couple of Futaba large servo disks were pressed into service. This meant a hand launch would be required until some tyres could be added using foam piping. Off she went with the little Speed 400 running sweetly. The climb was satisfactory however full down trim was still not enough for hands off flight! Once the power was reduced the nose up pitch reduced so I noted that some down thrust was needed however it was still very tail heavy in the glide. The first flight lasted about 5 minutes and there was still plenty of power



left. I have subsequently extended the motor mounts a few mm and put in some down thrust however it is still a bit tail heavy. Not to worry it can now rise off the ground on its revised wheels and will loop and roll and do those wonderful low/slow passes that I used to admire others doing. Flight time is well over 10 minutes on low throttle and the slightest bit of lift takes her skyward.

All in all a very satisfying project for a very reasonable outlay – now about that big senior Playboy and the Speed 700 with 2:1 belt drive, 10 cells and 14 x 7 prop!!! But that's another story so stay tuned, see you at the field, and good flying.

Neil Spencer

RADIO -- Device that enables an airplane to crash in different places than it otherwise would

CRASH -- Method of seeing inside model airplane

ELEVATOR -- Device to prevent level flight, particularly for budding aerobatic pilots

FLYING FIELD -- Take off area. Landings occur elsewhere

2002 TOC Impressions

Andrea and I were able to combine an overseas holiday with a trip to the Tournament of Champions in Las Vegas recently. I would like to share with you some of my observations of this event, which is arguably the pinnacle of aeromodelling competitions.

This was the 18th Tournament of Champions to have been held since 1974. With names such as Hanno Prettner, Chip Hyde, Quique Somenzini and Christophe Paysant-Le Roux having graced the top step of the podium, you are assured of the pedigree of the event.

It's called the "Tournament of Champions" for a reason – every flyer had to have won or placed highly in the USA nationals or an international competition before being invited to compete. Even with the hand picked field of 21 competitors though, there was a marked difference in the quality of the flying between the top four (Chip Hyde, Christophe Paysant-Le Roux, Quique Somenzini and Roland Matt) and the rest of the field. By the finals day, we had become a little blasé about what we were watching, scoffing at a pilot missing a snap exit by 10°. But these small errors were the differences between the top money and the minor places. And there was some serious money at stake. \$50,000 dollars (US) for the winner made the competition intense.

The models used in the TOC are giant scale aerobatics aircraft. The models must be a scale replica (certain variations and tolerances are allowed) of a full size aerobatics aircraft. The most popular aircraft modeled was the Extra 330. And the models are BIG – around 3m wingspan with at least a 150cc twin-cylinder engine. The winner, Chip Hyde, used a prototype 200cc four-cylinder engine. To get an impression of size, think of putting a 2m-pattern model next to a trainer – that's what a 2m-pattern model would look like next to a TOC model.



On most models, the quality of the covering and paint was superb. Think of the cost of fitting out the models with servos – three or four JR 8411's (\$210 a pop) ganged together for the rudder, two or three on each aileron, two for each elevator. Of course you need a backup model in case you have a problem with the primary model...

The competition consists of three disciplines – known and unknown patterns, and a freestyle program. The known patterns were built using 21 manoeuvres that were published before the event – the manoeuvres were known but how they were put together to form a pattern wasn't known. The unknown patterns were built

using any manoeuvre from the FAI aerobatics catalogue (100's to choose from). The known and unknown patterns are distributed to the competitors at the end of the previous day of competition, and no practice is allowed. The pilots and callers familiarise themselves with the patterns by "dry-flying" them with stick planes.

Andrea and I arrived in Las Vegas on Thursday 10 October around noon. The competition had started on Wednesday. Our hotel room wasn't ready yet, so we (well, me really) thought it would be a good idea to go to the field. After a bit of a transport nightmare (long and boring story) we arrived at the field in time to see the final flight of one of the known rounds, and a complete round of freestyle. Perfect timing.

Thanks to Peter and Caroline Goldsmith (Peter is a multi-time Australian champion pattern pilot who was competing at the TOC) we were able to sit in the restricted pits area on the infield grass just off the runway for the whole freestyle session. Wow! The high-alpha low-level flying was just superb. Watching the most talented r/c pilots in the world flying these monstrous models right on the edge of falling out of the sky was

2002 TOC Impressions (Continued)

brehtaking. The highlight was Christophe Paysant-Le Roux's flight. He flew the schedule he used to win the TOC in 2000, but with a few extra twists. Try a 3D-rolling loop from the top starting no more than 15m off the deck with a 3m-wingspan model and the wingtips coming within 1m of the ground at the bottom. I saw it, but it didn't look possible. At the end of the flight, the crowd erupted in cheers and applause, but then went silent, as if they were dumbstruck by what had just happened. This probably sounds melodramatic, but I can't stress how powerful these displays of flying talent were to the hardened r/c aerobatics nuts that were watching.

I thought the freestyles would be exciting and the patterns a bit boring – how wrong I was. Sunday's pattern rounds were compelling, watching the event unfold and seeing who handled the pressure best. The freestyles are the crowd pleasers, but the scores are made in the known and unknowns. You knew the importance of every manoeuvre, and the crowd let out a collective "ooh" whenever someone made a small error that was going to cost points. The quality of flying by Chip Hyde and Quique Somenzini was inspiring. Quique's first flight on Sunday was mesmerising in its perfection (it was the first flight of the day too, so he didn't have the benefit of watching the other pilots fly the schedule). How they can fly such a complex schedule with such perfection and no practice (apart from stick planes) is beyond me.

When the scores were tabulated, Chip Hyde came out a deserving winner. His patterns were beautiful, and his freestyles ballsy (if a touch repetitive). Christophe Paysant-Le Roux finished in second place. I was really looking forward to see a 2-time F3A world champion and TOC winner fly, expecting to see absolute precision. Christophe's flying was certainly superb, but I took great heart in seeing him make a number of fundamental errors, just like any of us. Still, that Thursday freestyle is burned into my memory as display of absolute control and confidence. Quique Somenzini finished in third place, and will no doubt be a bit disappointed with this. After Quique's perfect first flight on Sunday, a number of errors crept into his flights, to the point where he zeroed a large portion of a flight by reversing his flight direction mid sequence.

There were a number of tricks used by various competitors in the freestyles to get attention and add some pizzazz to their routines. Pretty much everyone used smoke, but Roland Matt went one better, using red flares on the wing tips of his model. During the flight, he would ignite the flares. As he rolled and looped, the red smoke would form spirals around the white smoke – really cool. Christophe Paysant-Le Roux used a variety of tricks. Ribbons would unfurl from the wing tips, firecrackers of glitter and streamers would be shot out of the model during a torque roll, all getting huge applause. Bill Hempel released a "USA" banner from the rear of his model during the tune "Proud to be an American". It was corny (to a non-American), but the crowd loved it. Part of freestyle scoring is originality, and these tricks would no doubt get some extra points.

This will probably sound obvious, but it really hit me that the basics are the foundation that everything else is built on in pattern flying. Horizontal and vertical lines must be dead true. Loops must be circular. Keep a consistent baseline height and depth. Get these things slightly wrong and your schedule is a mess. The difference between the 21 flyers was obvious watching the patterns. The top guys positioned all their maneuvers correctly, flew a consistent baseline height and depth, and flew true horizontal and vertical lines. At the other end of the score sheet, the baseline varied, the start and finish point of loops were different, snaps weren't clean. You get spoilt watching such talent though – the errors were small even at 21st place. The achievement of just getting an invitation would have to be the highlight of anyone's modeling career.

If anyone has the chance to visit the TOC in the future, I would say DO IT! The Sahara Hotel supports the event heavily with discounted room rates and a free shuttle bus service running all day on Friday, Saturday and Sunday. You can get close to the action and there is always something happening, whether competition or demonstration flights. The only problem for me was that I realised just how well a model aircraft can be flown, a very humbling experience.

Paul Marlan