Court CIRCULAR

THREE KINGS AERDMODELLERS

Winter - 2006 - 07
INSIDE THIS ISSUE

Cleaver - Mick Orchard's 2006 Nats Winning Barton B

Copy Deadline

All contributions are welcome send photos, ideas, letters, etc by email to duncan@east-two.co.uk as an attachment in Word for PC, or as a hard copy if you have no computer.

The Editor
31 Glyn Road
London E5 0JB
United Kingdom

The Newsletter of The Three Kings Aeromodellers London United Kingdom

Affiliated to the BMFA

Cockpit Comment from seat 19 Flt 165 LDN - GLA EasyJet (well not quite such an easy trip!)

Welcome to the latest edition of the Court Circular, sorry that it has been a while in coming, but so far it has been a busy year, lots of racing, a few successes, a few crashes, but I hope that you like the new redesign and have a great year flying with the Three Kings.

We hope to be able to get over the 50 member mark this year, which is as you can imagine is a milestone for any club, especially in this day and age, so if you havn't paid your fees, get them in quick smart to our new treasurer Brian Glitheroe.

As ever for this issue, once again we have managed to bring you a multi page celebration of modelling; The Three Kings way, so sit back , put your handle down and have an enjoyable read.

Cheers to this month's contributors.

Enjoy ***your*** Court Circular.

– And don't forget Let me know what you are up to.

It's your newsletter. Remember help in the form of pictures, stories and even dare I say it gossip is always gratefully received.

Duncan Bainbridge
duncan@east-two.co.uk

Club Contacts

Chairman
Brian Cordwell
15 Anglesey Gardens, Carshalton,
Surrey, SM5 3JD
T 020 8669 3021

cordwell6@blueyonder.co.uk

Secretary and Editor
Duncan Bainbridge
31 Glyn Road
Hackney E5 0JB
T 020 7682 0421

duncan@east-two.co.uk

Treasurer Brian Glithero
19 Military Road,
Rye,
E.Sussex,
TN31 7NX
T 017973 67143

Comp Sec and PRO and Patch Contact
Mike and Steve Waller
272b Woolwich Road,
SE2 0DW
T 020 83106101

SWSE20DW@aol.com

The Court Circular

The Court Circular is the Newsletter of the Three Kings Aeromodellers, and is produced by the Club for the members and selected affiliates and aeromodelling contacts, the views and opinions expressed are those of the correspondents only and do not necessarily represent the official view of the Three King Aeromodellers. Any comments or questions should be addressed to the specific author.

The Editor accepts no responsibility or liability for any loss or damage incurred or suffered by anyone as a result of this publication or in reliance upon or as a result of acting upon anything contained in this publication.

Copy is welcomed by the Editor from members and readers. But please don't forget that it is your newsletter, so remember that I am always on the lookout for interesting items for the newsletter, so don't be shy.

If you want your name in print remember it is your club and your newsletter.

I am particularly interested in photos of people's models, Engine and Product Reviews, Comp Reports, etc anything is very welcome.

News and Views

Sad News

Gig Eiflander

2005 ended on a sad note with the passing of two of the old brigade of model aircraft engine builders. First `Gig' Eifflander, who founded Progress Aero Works and made a large range of diesel motors, passed away on the first of December, 2005.

Dick McCoy

Later that month we heard of the death of American Dick McCoy who was one of the early pioneers of model engine design and construction. Dick McCoy's main interest was in tethered model race cars, and he adapted early model aircraft engine designs to suit these racers.

His engines set many speed records in both cars and model aircraft.

Monthly Flying Days at Croydon in 2007

If you look at the members list you will quickly realise that our club membership is spread far and wide.

However the common denominator is the fact that we all like to fly and the added bonus of belonging to a club that still has a very good flying site.

Fun fly days are for control line flying fun - practice,

pristine new models, tatty old models, training, testing, chatting and avoiding other jobs.

Starts about 10.00 hrs finish about 15.30 hrs depending on wind and weather.

Every effort is made to open the gate so cars can be taken onto the site and fence the site with hazard tape, but this cannot be guaranteed.

We are asking any non-members to book in with the organiser before travelling.

No R/C flying.

For general info on flying dates call Steve Waller
T 020 83106101
Email: - SWSE20DW@aol.com

Dates

18th February 2007
18th March 2007
15th April 2007

Organiser
Steve Waller 020 8310 6101
Mike Waller 01474 871569

20th May 2007
17th June 2007
15th July 2007

Organiser
Keith Hynds 01932 223078

19th August 2007
Organiser
Steve Waller 020 8310 6101
Mike Waller 01474 871569

All are welcome to bring along any C/L model and fly over the tarmac or grass but all are subject to any competition taking precedent.
In the past this has not been a problem with at least one tarmac and one grass circle being available for sport flyers at any time.

All are welcome, the more the merrier.

Contests

F2CN and Brit Goodyear at Croydon

1 April 2007

Pre entry essential to ensure event takes place please advise Duncan on 0207 682 0421 or duncan@east-two.co.uk

Racing to start from 11 am, access from 9 am, processing and line check from 10. Sport flying on the grass all day.

BMFA License essential.

Letters to the Editor

Some really nice nice words from around the world, many thanks - Ed

Duncan
Excellent issue Duncan. Well done . Have a good time in Oz.

Regards, Paul Eisner

Dear Duncan
How do you find the time! Another full and interesting mag. I was really taken with the “wind-farm in the sky” and your report on the Nationals.

Regards, Jo Halman

Hi Duncan,
Many thanks for the Court Circular, I look forward to reading it. See you at Bilston,
Regards,
Terry McDonald

Duncan;
Thanks for including me in your fine Circular.

Tom Wilk - Duluth, MN, USA

Old magazine plans on CD
www.cpinternet.com/~tawilk36

Dear Duncan,
Apologies for all the usual reasons for non-attendance. Wonderful to see the club going so well, long may it continue.

I have had a pretty good year, a lot of photographic work for the Fleet Air Arm Museum at Yeovilton, with a lot more in the pipeline.

The Carrier DVD has been pretty successful, and was shown on educational TV in Mexico!!!!! I have just been invited to submit it for a film festival in Caracas (honestly)... how odd.

Please send my wishes to all my friends at Three Kings, I am sorry I see them so rarely. Not being able to drive at all is a bit of a bugger when you are 200 odd miles away.

Best Regards,
Nigel

Here are some of Nigel's most recent photos taken at RNAS Yeovilton:

Just like Walace and Gromit - A close shave or not!!

Thanks also to Nigel for some amusing aero and assorted thoughts...

Most of which appeal to me being an ex infantry soldier - ED

A slipping gear could let your M203 grenade launcher fire when you least expect it. That would make you quite unpopular in what's left of your unit."
- Army's magazine of preventive maintenance.

"Aim towards the Enemy."
- Instruction printed on US Rocket Launcher

"When the pin is pulled, Mr. Grenade is not our friend."
- U.S. Marine Corps

"Cluster bombing from B-52s are very, very accurate. The bombs are guaranteed to always hit the ground."
- USAF Ammo Troop

"If the enemy is in range, so are you."
- Infantry Journal

"It is generally inadvisable to eject directly over the area you just bombed."
- U.S Air Force Manual

"Whoever said the pen is mightier than the sword obviously never encountered automatic weapons."
- General Macarthur

Round & Round

Duncan Bainbridge

How Hard Does a T/R Pilot Work

David Hines
Pitman of Rothwell /Hines VTR Team - Sydney

At a recent team race contest 3 different pilots wore heart rate (HR) monitors to see how hard they were working during the race.

The 3 pilots were 20, 38 and 50+ years old.

They were all flying “Vintage A” models which circulate between 19.5-20.5 sec/10 laps (still 18laps/mile in OZ). Damm Rothwell R250s fast and not much variation between them.

First an explanation of the relevance of the readings obtained by the monitors.

The conventional wisdom is “a person’s maximum HR Beats Per Minute(BPM) =220-age”.

Now this is only approximate and varies depending on the activity eg a person’s max for swimming is usually lower than their max for cycling, which is often still a little lower than that for running.

So a good estimate is HRmax = (220-age) ±10%.

If an athlete is training to build up aerobic base fitness, then exercise is usually conducted between 70-75% of Max HR for long periods.

If a well trained (elite) athlete is exercising flat-out for 1hr, then 85% Max HR is all that can be maintained for that period.

For less well trained people this period is much shorter. At HR much above 85% of HRmax then the exercise is real short term stuff(minutes).

Now for something that will come as a shock to you pitman, who thought our pilots were just slack. The measured HR after a 90 lap heat (Approx 3:20-3:25min) were 216 BPM for the 20 y/o 172 BPM for the 38 and about 173 BPM for the 50+ y/o.

In the final the 50+ y/o(who had done 3 heats by that stage) heart rate had reached 180 by the 1st stop (lap 55) and maintained that to the end.

As can be seen all 3 of these pilots must be working very near their maximum heart rates and certainly near their limits.

As the rotational speed has increased, the pilots have been having more and more difficulty keeping up with this speed for the duration necessary,

10 laps in CL speed 1 up is very different to 180-200 laps 3 up in T/R.

The 20 y/o has had enough experience to cope but was obviously working hard(Junior F2A World champ 2002).

The 38 has flown F2C in world champs and F2A also. The 50+ person had been having real difficulties coping physically with the demands of several heats an a final and not holding the model back all the way to the end of a final.

He had been training for 6 weeks doing approx 1 hr/day 4 day/wk prior to the recent contest.

His training had been at what was thought to be 70% max HR but the testing showed his max was higher than we thought and he was only at 65%, though this certainly helped.

We will need to up his training rate in future if he is to cope with the 17-17.5sec/10 laps needed for F2C.

It certainly would be interesting to know what happens to most of the F2C pilots.

If nothing else it certainly raise the question about the wisdom of remaining with the 46’8” lines in Vintage A in Australia.

After all Vintage A is a nostalgia event where many of the pilots are older and the rule need to framed in such a way that their participation is possible.

More Heart Rate info from French F2C Pilot and World Champion - Roland Suruge

You raise the right point concerning pilots : Team Race flying is a real sport .

I will make different comments : as a team race competitor and analyst and also as MD. Free consultation ...

Pilots in Team race should be able to sustain the effort of flying without reaching those high heart rates figures which are potentially dangerous .

The 20y. guy , beating well over 200 is obviously unfit , what other sport does he (or she practice ?) , Gameboy or Nintendo ?)

Medically , even at that age , this heart rate , maintained for 4 or 5 ‘ can be harmfull for
the heart .

His “safe rate” is 180 max ...

The 38y is somewhat better but 180 for 4’ is also a shade above his acceptable sustained “safe” rate . He should stay below 170 .

The 53y is obviously taking serious risks : he should consider cardio training or quit Race flying . His safe rate is 155 to 160 max ....

Next step is to record the heart rate down slope after the effort , or recovery time . well trained athletes resume their “basal” rate faster than the unfits .

Other observational datas :

most mistakes (piloting errors) happen at 75 to 95 laps in 100 laps races , and also at 120 to 130laps in 200 laps races and most pilots crave to reach 200 ....

The Oxygen deficit is dangerous for the heart of the pilots and also detrimental for the models by brain fade ...

Real racing need real physical preparation .

Roland

A reply from Steve Rothwell

Roland,
Thanks your valuable input.

I'd be interested in the HR data from other pilots in racing conditions, has anyone else done any testing of this? we were really surprised.

I'm the 53 year old and have been training and losing weight as I was finding it tough in finals as model speeds and my age and weight increased.

I had a medical checkup before I started the fitness programme.

I now weigh 80kg down from 94kg earlier in the year, previously I had increasing difficulty continuing the race after about 4 minutes.

We checked my recovery from 180 bpm and I was down to 140 bpm after 1 minute, but I did not monitor the time taken to return to normal however there was only 20 minutes or so between my heats and the rate was normal at the start of each race so I think it was okay.

In training 4 days a week I now peddle the training bike or work the rowing machine for an hour continuously at Hr of 130 and I do higher intensity bursts of 140-150 for 15 minutes once per week, the fitness adviser tells me we will have to do some higher rate work based on this new "race conditions" HR information.

My advisor has a background in cycling and swimming.

I suspect our results would not be unusual as I think the 3 pilots here were fitter than your average game boy jockey.

As I said at the beginning I would be interested in data from other pilots.

Steve Rothwell

and from younger F2C Pilot Hugh Simons

Roland,

A note about the recordings taken: The two scores around 180 bpm were checked during that pilots pitstop (that is, after a slow lap followed by a glided lap and a landing).

My somewhat higher reading was taken just after overtaking a model of similar speed, requiring short, fast steps on my toes, as you suggested during our correspondance.

Prior to this race, I had been cycling up hills for 1-1.5 hours every day, to stay fit for F2C flying. I am by no means overweight, and can ride faster for longer distances than most of my friends (one of which is a long-distance swimmer).

Furthermore, after that race I didn't feel tired or exhausted in any way, and would more than happy to do another 90 laps.

As you said, the recovery time is also a factor, and it took maybe 30-60 seconds to reach 100 bpm, the same as when I started the race.

So why the unusually high heart rate? Perhaps an error in the meter?

It is difficult to check the consistancy of the readings, as I don't think the meter could record the rates over a race.

In any case, I don't think my race situation was any harder than would be found in most other races, and easier than most in F2C. Perhaps we underestimate how hard the average pilot works during a race?

Hugh

And also from down under from Lance Smith

Hi all

A little bit of perspective is required as well.

Look at it this way, from a Biochemical/Clinical Chemistry point of view, your heart rate can go up to these levels without doing any work at all, it is called excitement. A few years ago one of the crew on the space shuttle had problems with his heart rate going up to 200 and it was due to excitement and not exertion. It is not an uncommon thing to happen is sport when the "fight or flight response" kicks in and it can last for 5-10 minutes. Even doctors notice it when taking pulses of patents who have just come in to the clinic after driving through town traffic.

The other most important factor is evidence. How may heart attacks do we have during competition ? Well, none that I have ever seen, even after some "heart stopping" F2C racing, or very close Vintage A finals.

I suspect, heart monitoring without any background data will only give us a starting point in which to view what is going on. Racing gives us racing pulses but there is no evidence that it is harmfull to our health, in fact I believe thet because we do it, we are actually better off health wise.

Sorry, it is my little biochemist coming out .... No need to panic yet.

Lance

Food for thought...

Has anyone done any testing in the UK?

Made me tired just reading! - ED Note to self - walk to work forget the bus!!

Collective Bargaining; but not of the Union Kind!

Duncan Bainbridge

Collections and Collecting

I recently sat down and catalogued my collection of engines, as someone who thought that he was not a real collector, well not in the way that many members of the aeromodelling community are, I thought that my collection would be small, at least mostly made up of 2.5cc modern racing engines, mainly diesels.

But given that I also collect records, I guess that collecting is in the blood so I was by no means surprised when I counted my collection to find that it amounted to something like 60 engines.

Small, I guess by most standards but even though it does not contain rare or unobtainable motors it still seems to me to be a healthy collection.

Dominated by modern 2.5cc racing engines, mostly TR diesels; Nelson's, Mazniak's, a BP, a CS F2C, ST G20D ex World Champs with the odd strange Russian motor, Oliver and CS's, AM, Davis Charlton, Mills, a few Cox 049's, a K & B 40; just in case I ever want to fly open rat and loads of PAW's.

Is there a prize for owning so many PAW's?

As with everything Ebay has changed everything, and a lot of my collection which I have bought quite cheaply is now probably worth a bit of money, but when I did the maths, my records are still worth more! Go Figure?

Anyone else care to comment?

Finishing a Carbon Fiber Prop

Bill Lee Bill@WRLee.Com

Carbon fiber props are all hand-made.

They start from an original prop from which we make a mold. If we desire to make changes to the original, we try to make the mold to accommodate the changes.

Each prop is hand laid up in the mold using continuous strands of carbon fiber and epoxy.

As a new prop comes out of the mold, it will have flashing around the edges. It will contain all of the flaws that were in the original prop, plus those we added as we made the mold.

The majority of the work will be on the "face" of the prop.

The "back" of our props are very accurate as the come from the mold and you should not have any work there. We try to make the mold as good as possible, but perfection is not possible. (The "face" is the side of the prop that faces forward when mounted on the model.)

All this means that the raw, unfinished prop needs to be "worked up" before it can be used.

There are several steps to finishing a CF prop.

Deflashing:

The thin flashing of epoxy and carbon around the edges of the prop must be carefully removed.

Use a sanding block and some 80-100 grit paper. Carefully sand the "outside" of the flash, bending it back over the surface of the prop as you sand. As you thin the flash, it will fall off the edge of the prop when you have sanded it through.

Be careful when deflashing. It is easy to sand too hard and eat into the edges of the prop or leave big sanding grooves.

The area around the hub needs special attention. There is usually flash around the edges of the hub which should be sanded off, leaving the back of the hub clean and flat.

Be careful when you sand the back of the hub since that surface controls the pitch and tracking of the blades.

The flash that leads from the leading edge of the blade along the side of the hub needs to be carefully sanded off. (A round stick wrapped in sand paper or a round rat-tail file is useful here.)

The front of the hub should be sanded flat and clean.

Finishing the tips:

The tips of our props are purposely "crude" as they come from the mold. This allow you to make the prop that suits your needs.

The tips must be finished, i.e., sanded to shape and thickness.

Cut the tips to give you the length of prop you desire.

Use a small needle file and file through the prop about 1/16" beyond the desired diameter, then sand the tips to the exact length.
Be careful since you can split the tips. (A little CA will usually handle minor problems if you do.)

Shape the tip to your desired shape by sanding the leading

and trailing edges.

Typically, the general outline of the rest of the blade is carried to the tip, with the actual tip shape (e.g., square, raked, etc.) as you desire.

Sand the face of the tips to blend the blade surface to the tip.

The front surface of the tips will usually be somewhat rough, reflecting the “working” of the mold as we adjust it to give the desired raw propeller.

The tips come from the mold pretty close, but will purposely have extra thickness: you need to make sure they are thin and continuous with the remainder of the blade.

Make sure that the leading edge of the tip is properly radiused to match the rest of the blade and that the trailing edge is thin and fairly sharp.

Balancing:

Use your favorite balancer.

We typically use the TopFlite Magnetic balancer, although it is a bit of a pain to use on the larger props. Sand the face of the heavy blade making sure that you maintain the airfoil.

Remember that a small amount of material taken off a long way from the hub changes the balance more than that taken off close to the hub.

Once you have the blade-to-blade balance correct, you may still see some hub imbalance.

Typically, this is so small as to be ignored, but you can sand on the hub some to try and get rid of it. An alternative is to add material on the light side of the hub.

I have seen some use coats of CA on the light side of the hub. I also have seen suggestions of drilling small holes on the light side and adding small lead pellets, but I worry about potentially weakening the hub by drilling holes in it.

Finishing:

Once balanced, sand the prop lightly on all surfaces with progressively finer paper. Don’t get to aggressive here since you are just trying to smooth the surface, not take off large quantities of material.

Start with 100 grit and end up with 400 grit paper. Recheck the balance to make sure you haven’t changed anything.

The prop is quite useable at this point but you can make it cleaner by using a small amount of rubbing compound and a coat of wax, or by adding a finish of some sort. In any case, keep an eye on the balance after each step.

Bits & Bobs

Noel Stephenson
Our Man in the North

CL ETIQUETTE;

HOW TO IMPRESS THE JUDGES -

WIN THE RESPECT OF YOUR FELLOW FLIERS AND BECOME A LEGEND IN YOUR OWN LIFETIME

It has become obvious in recent years that the flight-line discipline of some otherwise responsible CL fliers leaves much to be desired.

It seems that some of the rules of flight line etiquette should be spelled out, so as to avoid misunderstanding and bad feeling.

Strict adherence to the following simple rules will endear you to all your flying friends and guarantee your status as a Serious Flier.

The increase in your life insurance premiums will be more than offset by your enhanced celebrity status.

While these rules are specifically for control-line fliers, they may, with minor modification, be applied to other model flying disciplines.

1. It is expected that you will be fashionably late for your flight.

Do not, under any circumstances, appear sooner than 5 minutes after you are called to fly.

This will ensure that everyone knows that YOU are on next and guarantee that all eyes will be upon you when you eventually enter the circle..

2. You MUST bring your plane into the circle without the lines attached, tank empty, engine cold and preferably without a prop.

Fix it so that your assistant (you are far too important to carry out such menial tasks yourself) has to return to your car at least once to get the correct lines (or fuel, battery, prop, aide memoire, Beta Blockers and/or other medication). This is a Required Procedure if you’re going to impress the judges and applies to all forms of CL .

3. Stay out there for as long as possible before flying, running the engine, changing props, adjusting lines, filling and emptying the tank etc for long periods (a quick ‘tweak’ is for wimps) while other people are waiting to fly.

If you’re competing in Carrier, you’re in luck, as the carrier not only provides a convenient platform for extended adjustment of your model and its systems, but enables you to lay out your impressive toolkit to best advantage.

The other fliers, humbled by the thoroughness of your

preparations, will understand and won't think that you are 'Hogging the Deck'.

4. Stay in the circle, again for as long as possible, once you've landed, talking to your caller (All Serious Fliers have at least one), supervising the winding up of your lines, the cleaning of your plane (see Rule 2. lines 2 & 3 above) and generally faffing around while your heart rate subsides.

You'll be helping the next guy as his heart rate will be at full operating RPM before he starts his flight. It's not your fault if he gets so up-tight that he may be unfit to fly.

5. When you eventually leave the circle, be sure to leave behind your fuel bottle, battery, engine cleaning rag, hat, sunglasses and any prosthesis you can spare (A colostomy bag is a good one, as no-one will dare to touch it). This will create as much delay as possible to the next flier.

He's certain to forgive your disability, incipient Alzheimers and low IQ.

6. If you have a scale model with multiple, complicated and (ideally) unreliable systems, be sure to conduct full functional tests on these systems on the flight line, immediately before takeoff.

This responsible behaviour ,of course includes as much rectification as possible on such systems. If you can arrange it, appear in the circle without an engine, or better still, engines, installed. This will ensure that you will receive the maximum admiration from your fellow fliers and will allow you to repeat the systems tests with the engine(s) running.

If you still cannot find an excuse NOT to fly, fix it so that one or more of these systems fails, preferably on takeoff, and (Oh Horror!) causes a minor mishap.

This will preclude any further attempt at flight, and will give the opportunity to conduct a full accident inquiry in the flight circle.

The other fliers won't mind as they will still be admiring the complexity of your model and mourning its misfortune.

7. Ignore the pleas of the Circle Marshal or Contest Director to clear the circle. They're only dumb officials and don't understand the finer points of Being a Living Legend.

Getting yourself disqualified will only add to your already considerable reputation.

Why is my hat suddenly getting tight?

Is Epoxy Sexy?

by Graham Woods (1996(-

From The RC Soaring Website with thanks

The Horizon series of programmes on BBC2 are always enlightening but you may have regarded this particular one as just another environmental scare story. It was sexy viewing for the subject was male fertility, or rather the lack of it.

So why are you reading this?

Bear with me for a moment while I give you the gist of the documentary if you missed it.

Oestrogens

The programme revolved around new research and the supposition that we have polluted our environment with chemicals. Nothing new here except that men and embryos are the ones who suffer - a staggering fourfold increase (in some cases) in the number of cases of testicular and prostate cancer and male infertility (low sperm count) over the last few decades.

This appears to be related to infinitesimal quantities of oestrogenic (see note 1) compounds entering our environment.

Add to this the embryonic female-to-male switch that can be disrupted in the early stages of pregnancy to produce genital abnormalities in infants, and the problem gets worse.

The argument followed the familiar path of trying to find the source of the environmental contamination in nature; pesticides and/or their residues, PCB'S (2) and Nonylphenol (3) and hormones from the birth control pill finding their way into our water supply being chief suspects.

Bisphenol-A

The list could cover a myriad of modern day chemicals but there was a chemical included in the list of nasties which just caught my attention as it flashed past on the screen, it was called Bisphenol-A. It rang a bell because I had seen this chemical name somewhere before...

This is where modellers enter the picture for anyone who uses epoxy resins is probably exposing themselves to Bisphenol-A.

In my view, it may be present in small quantities in many 'Bisphenol-A epoxy' resins we modellers use, such as the SP range.

Given that we are talking about quantities too small to measure, and, over a long period of time, you could spare a thought for your unborn offspring and yourself next time you are up to your armpits in epoxy resin.

I suppose I've had my fair share of Bisphenol-A epoxy resin over the last 18 years of aeromodelling without really

realising all the dangers my hobby has held for me.

I daresay the workshop is liberally coated with traces of it and it has probably found its way into the house (and me) as well.

Time then for a reminder, in any case, of the dangers of such resin systems.

It pays to be aware ...

I may be scaremongering since no one said anything about epoxy resin in the TV programme but it pays to be aware of these connections bearing in mind that Health and Safety regulations are not mandatory, nor followed, in the home workshop. (UK - ed.)

It goes without saying that you shouldn't get any chemicals in your mouth or eyes and that you should at least use rubber gloves and/or barrier cream to provide some little, not complete, protection.

Handwashing is in order too.

Even when the resin has hardened there are warnings given about inhaling the dust from fibre and resin mouldings. I must admit to being lazy in this department in the past myself and shall be more careful in future.

Glossary

1. Compounds that appear chemically similar to the female hormone oestrogen.

2. PCB's - Poly-Chlorinated-Biphenyls

3. Used as an additive in a wide range of products including plastics and detergents.

Summary of possible hazards

- Skin sensitisation for people with allergies and sensitive skin

- Eczema, asthma, psoriasis and hay fever sufferers beware, you are probably more susceptible.

- Contact dermatitis - a more serious medical condition

- Liver damage - 4,4' diaminodiphenylmethane found in some hardeners (e.g.. Araldite 1927) can cause liver problems if absorbed by the body.

- Fertility, prostate cancer, testicular cancer - Bisphenol-A, a precursor of some epoxies, may be a danger for the reasons explained in the text.

More Chemical Hazards in Aeromodelling

Mark Greenwood

Graham's Woods' article about the perils of Epoxy sent me scurrying back to my chemistry degree notes.

I uncovered a few surprising facts:

Phenols

Ever wondered where the strange smell of epoxy comes from?

Phenols, including the dreaded oestrogenic bisphenol-A, all have a characteristic odour.

In other words they smell of fish.

Why is this?

It's because phenols are heavily present in fish oils and fats.

But this does not mean that eating fish turns you into a girlie, because they're different chemicals, so don't worry.

There's a prize for the first person to cover a set of wings using fiberglass and fish paste.

Mind you, it'd probably be better than Solarfilm.

Benzoyl Peroxide

I had a shock when I looked at the tube of Stabilit Express in my toolbox.

This contains something called Benzoyl Peroxide, a substance known when I was at University as "Don't bring that bloody stuff near me!"

Here's a recipe to have some fun:

- Take a dash of bezoyl peroxide and a splash of petrol.
- Leave in strong sunlight and retire to a safe distance.
- Wait for the BANG

Putting this information to practical use tells us that you can make your stabilit express cure faster by exposing it to direct sunlight, or preferably to ultraviolet light.

It also tells us that you can use it to make napalm, but don't quote me on that. (OK - ed.)

Cyanoacrylates

The one that really worried me was cyano. I looked up some base cyanoacrylates (the ones they probably use to make Zap from) and was confronted with a page full of warning signs.

This stuff makes you cry but also bungs up your eyes. It irritates every mucous membrane known to man (e.g. your nose, the insides of your mouth, your throat).

It bonds human flesh in seconds, but then you knew that.

What you didn't know is that, in high enough concentrations, it causes damage to liver, kidneys and brain tissue.

Wooah!

Hold on, don't go throwing it away yet because most of what I've said above could just as easily apply to unleaded petrol if you drank enough of it. Most of us don't go around drinking cyano.

Some of us sniff it, but the less said about that the better.

None of the glues we use are remotely dangerous so long as they're used with care.

So don't go smearing epoxy over your hands, pouring stabilit express in people's petrol tanks, or stuffing bottles of Zap-A-Gap up your nose.

Follow the warnings about using it in a well ventilated area (which usually means 'don't do it in a hot room on summer's day with all the windows closed') and you'll be OK.

Artful Dodging

John Bruman USA

I have always admired the cute little logo of the three pilots all tangled up that appears on the on the NCLRA web site, T-shirts, etc. I also have had many occasions when I wanted to decorate one of my racers with some other kind of art work that couldn't be done with masking tape and paint.

To the rescue, came a little web site for "Bel Decals" at: http://store.yahoo.com/beldecal/moddecpap.html

From them, I tried a little "starter kit" of special paper that would allow me to make water transfer type decals with my ink jet printer.

The kit included several sheets of both "clear" and "white" background paper as well as some very complete instructions.

Surprisingly enough, I forced myself to read and follow the simple instructions faithfully, and my first projects ended up better that I had expected.

The photos of my "Tony Stewart – Home Depot" "Bonzo" racer and my new "Pink Phink" quickie rat show the results.

The large racing numbers on the wing and the fuselage of the Bonzo were done with the use of MS Word "Word Art" with my settings for "fill color" set at "none" and a heavy black outline line color.

These were then printed on the white (opaque) decal paper and then coated with clear gloss "Krylon" spray can acrylic per the Bel instructions.

The large "Home Depot" logo on the wing took a little more creativity. I first found a suitable font in MS Word that duplicated the Home Depot stencil-like font. I then created a text box and formatted it with an orange fill color and a line setting of "none".

This was printed on a sheet of the Bel "transparent background paper.

I had to experiment a little at matching the orange produced by my printer, with the orange Monocoat on the wing.
There was a very slight color shift of the orange when I coated the decal paper with the Krylon acrylic.

After application of the "Home Depot" text box onto the wing, I simply outlined it with some 3/16" trim tape.

The NCLRA logo decals were ripped off the NCLRA web site and saved into MS Paint, where I screwed around with the size until I found something that was big enough yet small enough to prevent any objectionable graininess. I printed several of these onto one sheet of the Bel "white" paper, to be later cut out and used as I needed them.

Whenever one tries out a new product like this on a racing airplane, one of the major concerns is fuel-proofing.
Before I cut out any of the decals and put them on my airplanes, I allowed the Krylon coating on one of them to dry thoroughly, then tested it by wiping it with a rag dipped in raw 10% nitro fuel.

The 10% fuel seemed to have no effect on the acrylic coating, so I proceeded with applying the decals to the airplanes. Apparently clear gloss Krylon, will stand 10% fuel.

After applying the decals, I found that each airplane needed some paint touch-up from the abuse of my ham-handed approach to mounting engines, tanks, etc.
I made the needed repairs by wet-sanding all the damaged areas with 600 grit, and repainting with my automotive acrylic urethane base coat.

Thinking that both airplanes could benefit from an additional coat of clear, I went ahead and wet sanded the rest of the painted areas with 1000 grit to provide a little "tooth" for the new top coat.

I then crossed my fingers and sprayed the acrylic urethane top coat over the decaled areas as well as the rest of the painted surfaces of the airplanes.

Surprisingly, the highly caustic automotive acrylic urethane had no noticeable affect on the decals. They neither softened, changed color, nor wrinkled, from the effects of the urethane top coat.

This would appear to be a very viable approach to putting various kinds of artwork on our airplanes. We can now duplicate scale nose art, old gasoline and oil logos, access hatch instructions, our AMA numbers, etc.

American Memories:
My First Rat Racer

John (Phast 1) Bruman

I believe it was sometime in 1961.

I had progressed in my controlline flying to what I considered the perfect “Sport” combination of a Goldberg Shoestring Stunter with a Fox .25 on .011 lines.(“Sport” meant I wasn’t ready for the Stunt pattern but enjoyed doing a few loops and such).

I got a call from one of my flying buddies Ted White, that he needed some help and I was volunteered to help him out at that weekend’s big contest. I asked Ted what the problem was.

Ted said that Bruce Kunaschk was going to be busy that weekend, and he needed someone to pilot his “new” Rat Racer.

Rat Racer?!!

I reminded Ted I was probably his worse possible choice, in that I was really a beginner at controlline flying, and had never flown in a circle with anyone else much less be ready for competition.

“No problem” replied Ted with his usual “don’t sweat the details” attitude.

“C’mon over after work tomorrow (Friday), and I’ll train you.
So the next day after work, I threw my old Shoestring into the back of my pick-up and met Ted at a grade school playground in Maryvale, and put up my Shoestring.

While I was flying my usual inside loops, wingovers, an occasional nervous outside loop, etc., Ted walked out his lines, and got one of the neighborhood kids to launch his Fox powered Nobler into the same circle I was in.

Ted’s only advice was “Relax, there’s nothing to it.”

He carefully kept me informed as to what he was doing, where his airplane was, and eventually I got comfortable enough to watch his airplane once in a while instead of staring intently at my own.

Suddenly, I was having fun!

I was flying my Shoestring with my handle and lines, and Ted’s Nobler by listening to its sound, feeling where Ted was, and occasionally catching a glimpse of it out of the corner of my eye.

I began having fantasies about actual Combat flying as well as the famous Stunt routine Ted and Bruce had often demonstrated with two airplanes in the same circle performing the entire (1961) Stunt pattern.

We then landed, and Ted dragged out “our” Rat Racer for the coming weekend. It was an Ambroid kit-built P-40 profile designed for .099-.015 engines, with the fuselage reinforced with Formica to allow a pressurized Johnson .35 to be crammed into the nose.

The airplane was unbearably nose-heavy (Ted called it “tail-light”), and I seriously doubted it could even fly much less take-off and land safely.
Ted switched lines and fueled up the Johnson.

He motioned me out to the center to “straighten out the lines” while he tried to start the engine and find a needle setting.

After reaching the center of the circle, I barely had time to find the little brass rivet that identified “up” on the ancient EZ-Just, and pull out the slack in the lines, when Ted released the P-40!!

I tried shouting to Ted that I didn’t think it would fly, but I didn’t have time to say anything other than “Oh Shi….!” The little P-40 leapt into the air with the big Johnson roaring away with the obvious intent of screwing me into the ground like a tent stake.

Those people who contend that inanimate objects like model airplanes have no ability to love, hate, or seek out revenge onto human beings, have never tried to pilot a 3 oz airplane with a Johnson .35 at full song! That airplane literally hated me and earnestly wanted to punish me for having the audacity to think that I could exert any kind of control over its will!

It climbed nearly straight up out of my sight, and dared me to try to match my reaction time with its speed. In my panic, I got confused and instead of doing the “normal” thing like giving it some down elevator to level it out, I actually gave it “Up” elevator! By the time I did this however, it was already somewhere over my head, and the “Up” elevator merely leveled it out on the other side of the circle. By the time my eyes and senses caught up with the airplane, it was almost flying reasonably straight and level!

I eventually gained enough control to survive that initial tank of fuel. When the engine quit, the airplane tried to reverse its take-off procedure by diving straight towards terra firma. Fortunately, it slowed just enough that I had time to recover and somehow prevent it from burying itself.

With my entire body shaking from a nearly fatal adrenalin overload , and my head spinning from dizziness, I heard Ted shout excitedly:

“What’s wrong with that? It flies great!”

Stay tuned for chapter 2: “My First Rat Race Contest”

Chapter 2 - Race Day

Sunday morning, and time for my first controlline contest as an honest to God competitor!

Two days earlier I had flown for the first time in a circle with

someone else, and barely survived the initial flight of a barely controllable (for me) .099 sized airplane with a pressurized Johnson .35!

During the very brief Pilot's meeting, I got prompted on where the piloting circle was, the pitting circle, etc. Ted gave me some brief instructions about whipping the airplane around to his pitting location when the engine quit, and reminded me with his usual "relax, there's nothing to it".

As it turned out, there were exactly four entries in Rat Race, so they hastily took a vote and decided to do one "four-up" 140 lap main event rather than the customary elimination heats and a final. I wasn't sure what "four-up" meant, so I voted for the one race option thinking it would probably limit my punishment.

Our competition included the likes of:

Greenshields and Garcia
John Barr and Dick Narsickian
Gene Cooper and Claire Sieverling

Of course, I didn't know any of them by name, so I had no idea what to expect. As they brought out their airplanes for their test flights however, I began to get the picture of our situation. We had a hastily put together airplane and engine combination that I could barely fly, while they had what appeared to be highly developed special-purpose designed and built racers.

The other guys had fuel shut-offs so they weren't at the mercy of the fuel tank to pick their landing spot, various types of contrived fueling systems to speed up their pit stops, Team Race style electronic systems, and astoundingly fast airplanes.

I think I said something to Ted who simply shrugged it off with another, "Relax, there's nothing to it. We're gonna' have fun"

Along with everyone else, I got our lines pull tested and marched them out to the center of the circle where I was greeted by three other pilots. I wondered to myself, "When will they announce the two teams for the first heat?"

I somewhat absently stood in the center trying to look like I really belonged there and knew what I was doing. Each of the other pilots then introduced themselves and we shook hands like four football captains at the start of a game.

I cautioned them that I was just learning this racing business, and asked that they have some patience with me. Of course, none of them believed me, thinking I was playing some sort of mind game, but they were gracious and sportsmanlike just the same.

Ted nonchalantly started up our Johnson, and got a needle setting, and shut the engine down to await the "start" signal.

When the starter began his countdown. I suddenly knew what "four-up" meant!

"Fifteen, Ten, Five, Four…." The starter shouted while I checked for the little brass "Up" button on my handle and prayed that our engine wouldn't start so I'd be spared any further embarrassment.

"Three, Two, One, GO!"

Our Johnson roared to life and Ted released it before I could even notice it was running.

On the paved circle of the Phoenix Model Airport, the little P-40 was reasonably tame, and this time, I was a little better prepared for its sudden acceleration. I managed an almost acceptable take-off, and found myself in the center of the circle flying by myself!

Soon, the balky, highly tuned racing engines of our competitors sprang to life one by one, and I was joined by one, then two, and finally three other pilots. They quickly realized I had not been lying when I said I was new to all this. I think I even remember one of them actually saying; "Hey you weren't kidding about being new!"

As the race wore on, I quickly realized Ted and I had the slowest airplane in the race, and I got the hang of simply flying low so I could get passed at least once every lap by someone else. In the meantime,

Ted was outside the circle doing all sorts of gyrations with his arms and legs trying to tell me to fly a little higher and I wondered to myself how I was supposed to do that when someone was constantly passing me?!

Soon, we ran out of fuel, and I luckily got the little airplane whipped around to Ted's pitting spot so I could take a breather.

But not for long! Ted had the airplane refueled and restarted before I could catch my breath, and I was back into the fray.

I began to realize things weren't quite so complicated for some reason. I was still getting passed almost once every lap, but for some reason, not quite as often. As I looked around, I then realized there were only three of us flying.

Out of the corner of my eye, I could see a pit man frantically trying to change a plug or prop while the rest of us were racing.

About that time, our Johnson again ran out of fuel, and I whipped/glided the little P-40 to Ted's waiting grasp. Again, it was a matter of "Gloosh" with the fuel bulb, "Click" with the plug wire, and "Whomp" one time on the prop, and we were back in the air.

Now there were only two of us flying.

One of the California pilots pitted about the same time as me, and was now back in the air, and I was now only getting passed about once every two laps. I mentioned to

the other pilot, “What’s going on with those two other guys?”

“They crashed”, was his simple explanation, “It’s now just you and me.”

“Don’t worry, you’re doing fine.”

About 15 laps later (actually about 25 laps for my opponent), my lone opponent snapped his airplane up and down to kill the engine and landed, taking his place next to the other two “downed” pilots.

Now I was standing in the center of the circle flying by myself.

In the meantime, Ted was doing more gyrations, jumping up and down, yelling and throwing his hat in the air. Finally the engine quit again, and I landed to be informed that we had just taken Second Place against some of the fastest controlline Team Race and Rat Race teams in North America!

Somewhere (if Ted White is still alive) I’m sure he still has a nifty little Second Place trophy from the “Air-Zona Model Airplane Club 1961 Rat Race”.

I wonder if he ever thinks back to the good old days and the fun he made for an awkward, new, controlline pilot.

Thanks Ted.

GOODYEAR TEAM RACING

Chris Barker

The future of the domestic team race classes has been under discussion for several years.

There has been a gradual loss of interest in all classes, but particularly in the Goodyear classes.

For the last few years, Open Goodyear has attracted only enough competitors to fly little more than the Final.

British Goodyear has been beset with engine problems, and despite changes to the engine list, the fundamental problem is that there is no “off-the-shelf” engine available for competing in this class.

It has been apparent for many years that the successful teams in this class are either skilled model engineers, or spend a lot of money having their engines modified by someone else, which goes against the nature of a class aimed at inexperienced fliers.

It has been suggested that Goodyear should be “absorbed” into the F2CN class, but the CLTC is against this proposal because an “unlimited fuel” class remains the best introduction to team racing and F2CN is the intermediate and natural progression to F2C.

The CLTC would like to propose that the current Goodyear classes are abandoned, in favour of a new class, whose rules would broadly be as follows:

- Current BGY model rules (scale profile, enclosed controls, “wobbly” wheels, external outboard fuel tank, 15.92M x 0.34mm multi-strand)

- Any 2.5cc diesel engine.

- Injection moulded, thermoplastic propeller (unmodified).

- Fuel feed by suction only.

It is believed that this class will provide new challenges for all competitors, yet make a class that is attractive to the inexperienced flier.

Engines are easily available commercially around the world.

It is not necessary to be an expert in moulding propellers or modifying engines to be competitive, yet the established top teams will still (no doubt) show the rest how it should be done!

Open Goodyear has been droped from the Nats programme and will be replaced with Provisional Suction Goodyear.

Chris Barker
cheditaf1@odiham.raf.mod.uk
Chairman
Control Line Technical Committee
Feb 07

GENERAL CONVERSION FORMULAE

From	To	Multiply by
inches	millimetres	25.4
millimetres	inches	0.0394
inches	centimetres	2.54
centimetres	inches	0.3937
feet	metres	0.3048
metres	feet	3.281
yards	metres	0.9144
metres	yards	1.094
miles	kilometres	1.609
kilometres	miles	0.6214
sq inches	sq centimetres	6.452
sq centimetres	sq inches	0.155
sq metres	sq feet	10.76
sq feet	sq metres	0.0929
sq yards	sq metres	0.8361
sq metres	sq yards	1.196
sq miles	sq kilometres	2.589
sq kilometres	sq miles	0.3861
acres	hectares	0.4047

SAM 35 Vintage Gala
Old Warden 22- 23 July 2006

The VTR Cup.

We had an excellent entry for this year's Cup, eight in all, many being well known from past appearances. Dave Finch's Ole Slippery was a new model built for this year which looked very elegant and flew well according to Dave.

Julio Isidro, our old friend from Portugal, had brought an American made Able Mable, which he had had to cut about a lot in order to fit a PAW 29. He chose this motor because he did not have a suitable vintage type to hand.

Another new entry was Tony Goodger's Lazy Daisy, powered also by diesel, an ED Hunter this time. All the other entries had been seen before. Sam Alexander phoned me in great distress just before the Gala weekend, he had had a disaster with the fuel proofing of his new model which left him high and dry with nothing to fly.

On these grounds, he decided the long journey from North of the Border wasn't on. We missed you Sam and you must try to make it next year. My Able Mable was flown by Roger Reese and pitted by Ken Newbold,

Results.

Pos'n	Team	Model	Motor
1	Millar/Court	G-Mac	Frog 500
1=	Finch/Ward	Ole Slippery	McCoy 29 160
3	James/Goodger/Blackwell	Lazy Daisy	ED Hunter
4	Reese/Newbold	Able Mable	ETA 29
5	Blackwell/James/Goodger	Challenger	ED Hunter
6	Millar/Court	Battler	Amco 3.5BB
7	Bainbridge/Orchard/Delgado	Mercury Mk I	Frog 500
8	Isidro/Ridley	Able Mable	PAW 29

Strange to say the fastest heat of the day was done by Julio, with Tom Millar's Battler not far behind. All the glows seemed to be acting up.

The cup was awarded to Tom Millar as Dave Finch won it last year and it can't be won two years in succession by the same team.

SAM RULES TEAM RACING
CLASS A

PLACE	TEAM	TIME
1	Millar/Court	4:58.5
2	Finch/Ward	6:34.3

CLASS B

PLACE	TEAM	TIME
1	Bainbridge/Orchard	7:26.2
2	Isidro/Ridley	128 laps

Weatherman, Phantom & Midge Speed

22nd July 2006.
Dick Roberts

This event was the final one in the Britim Trophy Series of Weatherman Speed events, where Brian Lever presented the trophies and £50 cash awards for each class.
We had a total of fifteen people enter the three events being flown, with 19 Weatherman present to do battle, three each in the two Phantom classes and seven for the Midge class!

Keith Garbett & I were joint C Ds with a lot of invaluable help from our Sponsor, Brian Lever, thanks Brian!
As promised by the Met Office, the weather was very good to start, almost no wind but a little warmer than I really like.

The flying commenced with Keith and I doing our stuff in Weatherman before the masses arrived. I managed a good time in Class 4, but Keith's engine refused to run consistently, so no time for him.

Weatherman :
Of the 19 listed to fly, only five did not put in times. There was no serious carnage I am glad to report, but a couple of "run ins" were caused by too much torque/ insufficient tip weight.

Ken Taylor's Nelson 2.5 Glow powered model gave us the best entertainment, fortunately without any serious damage.

The prizes are awarded to fastest over the series of competitions, so previous best speed is quoted for each class.

Class1 (Mills 1.3)
Previous best: Ken Taylor at Oakington on 16th April
16.72 sec / 53.82 mph. 1
Mick Taylor.
18.92 sec / 47.57 mph. 2
Ken Taylor.
19.17 sec / 46.95 mph.
Tony Goodger.
18.94 sec / 47.52 mph. 3
Dick James.
19.45 sec / 46.72 mph. 4
Julio Isidro
23.3 sec / 38.63 mph. 5

Class 2 (1.5cc)
Previous best : Ken Taylor at Oakington on 11th June
25.45 sec / 70.72 mph. 1
Ken Taylor. PAW 1.5 TBR No time
Dick James. PAW 1.5 CT 33.7 sec / 53.41 mph. 2
Tony Goodger. AP .09 No time
Brian Blackwell. PAW 1.5. 34.36 sec / 52.39 mph 3

Class 2 (1.5cc)
Previous best : Ken Taylor at Oakington on 11th June
25.45 sec / 70.72 mph. 1
Ken Taylor. PAW 1.5 TBR No time
Dick James. PAW 1.5 CT 33.7 sec / 53.41 mph. 2
Tony Goodger. AP .09 No time
Brian Blackwell. PAW 1.5. 34.36 sec / 52.39 mph. 3

Class 3 (2.5 cc).
Previous best : Ken Taylor at Oakington on 11th June. 20.85 sec / 86.33 mph. 2
Mick Taylor, Effy Special. 20.8 sec / 86.53 mph. 1
Dick James, PAW 2.5 TBR/CTS. 24.3 sec / 74.07 mph. 3
Ken Taylor, Nelson 2.5 Glow. No time.
Tony Goodger, Rossi 15. No time.
Brian Blackwell, Nelson 15. No time.

Class 4 (3.5cc).
Previous best: Jim Springham, Oakington on 16th April 19.65 sec / 91.6 mph. 2
Dick Roberts, K&B 3.5 Glow. 19.61 sec / 91.8 mph. 1
Dick James, OPS 21 Glow.23.59 sec / 76.3 mph. 3

Class 5 (5.0cc).
Previous best : Dick James, Oakington on 11th June. 22.66 sec / 79.47 mph. 1
Dick James, Dooling 29 Glow. No time.
Digby Perriam, OPS 29 Glow. No Time.

Well done Ken Taylor in winning two classes, maybe get the 2.5cc next year if the Nelson can be tamed a bit?

We were supposed to have had six previous comps, but bad weather put paid to three of them leaving only three qualifiers.

All in all, a good close set of competitions, good fun for all I understand, and the guys are already getting ready for next year, when Britim will again provide prizes.

Phantom Speed 1.5cc.

Julio Isidro, PAW 1.5 DS 24.79 sec / 72.61 mph. 1
Brian Lever, PAW 1.5 CT. 27.19 sec / 66.2 mph. 2
Digby Perriam, ?? 35.33 sec / 50.38 mph. 3

Phantom Speed 2.5 cc.
Tony Goodger, Oliver Tiger 111 21.99 sec / 81.85 mph. 1
Julio Isidro, Effy Special. 26.49 Sec / 67.95 mph. 2
Chris Norris, ?? 28.03 sec / 64.22 mph. 3

Vintage Class 2 Speed (Midge).
Dave Smith. Midge / Frog 150. 18.77 sec / 95.89 mph. 1
Taffy Bollen Midge / Frog 150. 19.13 sec / 94.09 mph. 2
Eric Bulmer. Midge / ??? 22.87 sec / 78.7 mph. 3
Ted Smales. Midge / ??? 25.36 sec / 70.97 mph. 4
Julio Isidro. Midge / PAW 1.5 No time.
Digby Perriam. Midge / ??? No time.
Brian Lister. Midge / Frog 150 No time.

Congratulations to Taff Bollen, he only flies about twice each year, at Old Warden & in Portugal, his quickest time ever I think.

A better turnout than usual this year for some reason. No records broken, but some pretty good times recorded.

The weather took a turn for the worse at about 2.00 pm, sky going dark and rain clouds building up on the horizon.

At about 2.15 or so, we heard first signs of thunder so rushed through as many times as we could before the heavens opened. By 2.45 we had had what I was told is a “twister” across the field, whipping up dust and anything left lying around.

I was told subsequently that many free flight models had been caught up in it and smashed, what a $%*&$. That finished us for the day, but by about 4.30 the free flight crowd were out flying again, great stuff!

Our thanks to Brian Lever for the prizes and his help during the day, also thanks to Steve Betney for his support and efforts as C/L Comp Sec. Keith & I hope to see you all next year, if not before.

Gallery Pages

Aussie F111 Arrival!

Aussie VTR Models and R250 Powerhouse