

THE VOICE OF CONTROL LINE
AEROMODELLERS FROM
AROUND AUSTRALIA

Number 76



Produced by the Victorian Control Line Advisory Committee

April 2004
INSIDE THIS ISSUE

Contest Calendars
Around the Clubs
Tarmac Notes from W.A.
Contest Results including Hunter Valley Championships
Pitch V Speed in Classic B
Tacho's Corner
Latest Nationals News
For Sale
Wanted

**Copy Deadline for next issue is:
Wednesday 21st April 2004
PRODUCTION SPECIFICATIONS**

Please remember when submitting copy that if you have access to a PC, or suitable typewriter you can save me retyping by giving me your items pretyped, and please use a good black ribbon for best reproduction.

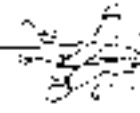
Best of all is to send it on a 3.5" disk as a Windows Write, Word for Windows, or as an ASCII TEXT FILE or use Email

Contest results should be tab delimited, ie use a single tab between each column of results, if submitted by disk. This makes formatting much easier on the editor.

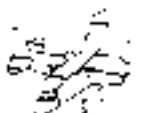
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COMING EVENTS



COMING EVENTS



CONTROL LINE CONTEST CALENDAR 2003/2004

DATE	EVENT	CLUB
APR 4	C.L.A.G. Country Flying Days	Maffra
APR 4	Simple Combat.	SMAC
APR 10-12	VMAA CONTROL LINE STATE CHAMPIONSHIPS	
	CLAMF, KMAC, CLAMF.	
APR 17-23	57 th AUSTRALIAN NATIONAL CHAMPIONSHIPS BUSSELTON WA	
APRIL 25	Classic Stunt,	KMAC
MAY 2	Vintage "A" Team race, Aust "A" Team race.	SMAC
MAY 2	C.L.A.G. Country Flying Days	Knox
MAY 16	FAI & Combined Speed , Triathlon (Artil Trophy), 1/2 A Team race.	CLAMF
MAY 23	FAI (Yeoman), Novice & Jnr Aerobatics, Simple Rat race, Classic Stunt.	KMAC
JUNE 6	Balloon Burst, Limbo.	SMAC
JUNE 6	C.L.A.G. Country Flying Days	Moe
JUNE 20	FAI Team race, Goodyear , 1/2 A Combat, FAI & Modified Combat.	CLAMF
JUNE 27	Vintage Stunt, Combined Speed, Classic Stunt, Vintage "A" Team race.	KMAC
JULY 4	Simple Rat race (whipping permitted).	SMAC
JULY 11	FAI & Combined Speed , Jnr 2.5cc Combat, Mini Goodyear , Jnr 2.5cc Rat race.	CLAMF
JULY 25	FAI (Stuntmasters), Novice & Jnr Aerobatics, Class 2 Team race, Classic "B" Team race.	KMAC
AUG 1	Simple Combat.	SMAC
AUG 8	FAI Team race , 2.5cc Rat race , 1/2 A Combat.	CLAMF
AUG 22	Classic Stunt, Vintage "A" Team race, Combined Speed.	KMAC
SEPT 5	Vintage "A" Team race, Aust "A" Team race.	SMAC
SEPT 19	FAI & Combined Speed , Simple Rat race, 1/2 A Team race.	CLAMF
SEPT 26	FAI, Novice & Jnr Aerobatics, Classic Stunt, Bendix.	KMAC

Events will be flown in order of printing. Events in **Bold type** will be flown over hard surface

CLAMF Frankston Flying Field, Wells Rd, Seaford (Melway 97J10), 10.30am start

Contact :- G. Wilson (03) 9786 8153,

Events conducted by CLAMF at the KMAC Field (Melway 72 K9) 10.00am start.

Contact :- H. Bailey (03) 9543 2259

KMAC Stud Rd . Knoxfield (opposite Caribbean Gardens) (Melway 72 K9) 10.00am start

Contact :- T. Matthews (03) 9560 0668.

SMAC Contact :- Reeve Marsh (03)9776 5949

VMAA Horsham. Contact :- V. Cresp (03) 5382 4065

BRCAC Bendigo-Newbridge Rd . Marong

Contact :- S. Power 03 54 424 925

CLAG Contact :- Graham Keene (03) 51924485

Details of venues can be found on web site www.clagonline.org.au/home.htm

NOTE - All SMAC events to be held at KMAC flying field. All events at KMAC except Aerobatic events to be run by CLAMF, DAC & SMAC members

C.L.A.S. Contest Calendar 2004

DATE	CLUB	EVENT
4th Apr	KMFC	1.6cc Combat and Slow Combat
10-12th Apr	VMAA	VMAA C/L STATE CHAMPIONSHIPS
18th Apr	COMSOA	"F2B Aerobatics. Buy, Swap and Sell. "
17th-23rd Apr		"AUSTRALIAN NATIONALS, Busselton.
1st-3rd May		"ALC field, Chetynd St, Loganholme. QLD" QUEENSLAND C/L STATE CHAMPIONSHIPS
15th/16th May	MDMAS (Muswellbrook)	VETERANS' GATHERING
30th May	SSME	F2B Aerobatics
12th-14th Jun		Venue to be confirmed N.S.W. STATE C/L CHAMPIONSHIPS
20th Jun	KMFC	Palmer / Aldrich Classic Stunt
27th Jun	KMFC	GALA COMBAT DAY
4th Jul	IMAC	F2B Aerobatics
11th Jul	KMFC	AGM. 2.5 Stunt, Simple Rat and Slow Combat
17th Jul	REMAC	Vintage Stunt (incorporating award for best All American)
24th Jul	SSME	"Vintage 1/2 A, Vint B, Goodyear
CANCELLED TILL OCTOBER		
25th Jul	SSME	Phantom, Vintage A, Bendix T/R
8th Aug	KMFC	F2B Aerobatics
29th Aug	SSME	Slow Combat (Bonus points for WW2 Style model).
12th Sept	KMFC	Classic Stunt, Vintage Stunt, Simple Rat, Slow Combat, SWAP MEET"
26th Sept.	SSME	F2B Aerobatics
9th October	REMAC	Vintage Stunt (including special award for best Fox powered model)
17th Oct	IMAC (Berkeley)	F2B Aerobatics
24th Oct	KMFC	JUNIORS DAY
7th Nov	SAT (Kelso Park)	F2B Aerobatics
14th Nov	KMFC	Vintage T/R, 1/2 A, A and B.
21st Nov	NACA at Gateshead	H.S. Classic Stunt & Cardinal Stunt. (I. Smith Ph:024975 2292)
28th Nov	KMFC	1.6 and Slow Combat
5th Dec	Doonside (at Kelso Park)	F2B Aerobatics
12th Dec	KMFC	Christmas Party and Fun Fly

Doonside. At Kelso Park North.

"IMAC (Illawarra Model Flying Club)- Flying site @Hooka

Ck Road, Berkeley. NSW”

“KMFC (Ku-ring-gai Model Flying Club)- St. Ives Showground, Mona Vale Rd, St. Ives. NSW”

“NACA (Northern Area Contest Aeromodellers)-Gateshead H.S., Pacific Hwy, Gateshead. NSW.”

“REMAC (Ryde Epping Model Aero Club)-Peter Board HS, Wicks Rd, North Ryde. NSW.”

“SAT (Sydney Aeromodelling Team)-Kelso Park North, Henry Lawson dr. Panania. NSW>” “on Drive, Panania. NSW. “

“SSME (Sydney Society of Model Engineers)- Model Park, Luddenham Rd, Luddenham. NSW> “

“WMFC (Werrington)-Entrance to flying site @cnr. Landers & Walker Sts, Werrington. NSW.”

“MDMAS (Muswellbrook District Model Aero Sports Inc.) Mitchell Hill Field, New England Hwy, Muswellbrook”

“COMSOA (City of Maitland Society of Aeromodellers) Raymond terrace Rd, Metford. NSW. “

NOTICE SSME LUDDENHAM

Due to SSME Luddenham members going to the world championships, the July Team Race Weekend will be postponed to

October 30th and 31st 2004.

Sorry for any inconvenience

Saturday 30th October

Vintage ½ A
Vintage B
Goodyear
Combined Speed

Sunday 31st October

Phantom
Vintage A
Bendix

Cheers Tony Bonello



Control Line Aeromodellers of Gippsland Inc.

Meeting held at Traralgon Sunday March 7th

Six eager Clagsters finally got the long awaited calm day; towards the end conditions were dead calm, very enjoyable. As “Mr Good Vibes” is known to say, we were all suffering from “foregone Flyers fever”, it was good to get airborne again.

The “Blue Brothers”, Vic and Steve Mitchell, made the long trip to be with us, both gents managing several flights. Vic’s “URK” Enya .19 now flying more smoothly with its extended nose and additional lead ballast, a soon to be fitted silencer should finish off the required extra nose weight. His “Foonix”, based on a model called “Phoenix Rising”, but with clipped wings (to fit the car) and OS .35FP also made an appearance. Steves “Trio” originally a “Nobler” based model, now features 56” span, lengthened nose and tail moments, 4” bellcrank and Merco .35 for power. This much modified model or a least one of them, hence “Trio” was flown at the 72’ or 73’ Nats at Geelong.

Steve claims the plane is flying very nicely now however a loose engine is the next thing requiring some attention.

Graham Vibert, “Mr Good Vibes” again had his very fast “Shoestring” OS .35FP airborne giving an impressive display of highspeed aerobatics. He was even noticed lying on the ground doing overhead eights, show off!

John Goodge had trouble getting a good run from his Stalker .51RE, a loose back plate suspected of being the problem. Later when looking through the bag of spares and tools that came with the engine he commented, “so, that’s what that thing is that looks like it could tighten the back plate”. His HP .40 combat wing however, was flying very nicely until yours truly had the bladder tank burst when inverted overhead, the resultant flutter to earth luckily caused only minor damage.

Ron Jones brought along his ever reliable “Too-up” OS .15FP and also his new Fox .35 powered “Nobler”, built from a Saturn Hobbies kit. The “Nobler” now flying very smoothly after a bit tweaking by Mr Goodge.

We were again joined by visitor Ben van Poppel, who although vision impaired has set himself the challenge of flying a control line model. With my assistance Ben got in three flights, two with an OS .46 powered stunter and one with a Coreflute “Clam”. The combat “Clam” proving to be a bit too twitchy for the newcomer, the flight ending in a thud after much laughter and the best efforts of the model to mow the complete circle.

The Coreflute Clams later proved to be well up to the task, several combat bouts ending with no damage but lots of smiling faces.

Another visitor from Traralgon 14 year old Jess, got in a full flight, also with the OS .46 stunter, He seems very enthusiastic being with us most of the afternoon, we may have a new recruit.

Our next meeting Sunday April 4th is at Moe, details at www.clagonline.org.au

All visitors are very welcome, if you intend flying current VMAA membership is required. Moe is an excellent venue, the grass is always well mown, toilets are available and only 1 and 1/2 hours from Melbourne.

SUBSCRIPTION APPLICATION

ARE YOU BORROWING?

If you have just finished reading somebody else’s copy of Australian Control Line News why not get in now and order your own copy. Australia and New Zealand residents cost \$20A and other countries \$30A. For this annual amount you will receive eleven issues of this newsletter, and be up to date on Control Line both in Australia and elsewhere. Please make payments payable to “Control Line Advisory Committee”

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Hunter Valley Champs 6&7th March, 2004



Classic Stunt

Scheduled to be run at 1.00pm Saturday the event was held over to Sunday due to wet and windy weather.

Eight flyers made the start at 7.30am, due to time constraints we only completed one round. The flyers competing ranged from experts to a number flying in their first comp.

It was close at the top of the tree for 1st, 2nd & 3rd. Feedback from the new flyers indicated they were happy just to compete and take their models home in one piece.

Results

1 st Reg Towell	561	(Thunderbird/St46)
2 nd Frank Battam	550.5	(Nobler/Fox35)
3 rd Dave Murrell	547.5	(Veco Hurricane/LA 46)
4 th John McIntyre	497	(Lynx/K&B 40)
5 th Don Kayssecker	431	(Tucker Special, 431)
6 th Len Horwood	312	(Phoenician/Magnum 40)
7 th Max Haines	198	(Nobler, OS Max 40)
8 th Steve Yeatman	131.5	(Nobler, 57 LA 40)

F2B Aerobatics

The event started a little after 9.00am with threatening skies and a slight breeze. Judge for the event was Len Surtee's the plan was to run a minimum of 2 rounds.

As it turned out the rain held off and 3 rounds were flown. A large variety of models and motors were used by the competitors, all worked well and the standard of flying was good.

Reg Towell and Frank Battam both used Saito fourstrokes in their models and these performed well. John McIntyre had a newish St60 powered model, which performed well and caught my eye with a great last round flight, he was unlucky to run short of fuel at the end of the flight.

Steve Bakac made a welcome return to F2B with a piped OPS 40 powered Saturn which flew well.

Thanks must go to the flyers for travelling and supporting the event.

Results

1 st Reg Towell	2367.5	(Sea Fury/Saito 56)
2 nd Frank Battam	2269	(Gee Bee/Saito 56)
3 rd Paul Allen	2217	(Privateer/St 46)
4 th Dave Murrell	2128	(Lady Luck/St 46)
5 th John Elias	2126	(No Name/St 60)
6 th John McIntyre	2058.5	(Makromaster/St 60)
7 th Steve Bakac	2036.5	(Saturn/OPS 40 piped)
8 th Gary Brett	1849.5	(Twister, Fancher/Brett mods, Dixon FP 40)
9 th Wayne Jackson	1268	(Time Machine, K&B 61)

Report by Paul Allen
Aus 23305

TARMAC Notes for February and March

There has been quite a lot of activity at our club field lately with some brand new members, a few retread control liners sneaking back from the dark side (R/C ☺) and of course the usual suspects as well. It might have been triggered off by the good weather of late. Among the new arrivals we have seen some youngsters too. Stephen Mc Murray and his son Connor have recently joined the club and we were visited by another potential member named Lorne, who turned up with a freshly finished ARF Nobler, his wife and small daughter. While I am mentioning youngsters, I should include Tom Christensen who has also visited us with his dad, long term modeler Russell Christensen.



A photo from the archives is this picture taken by Phil Trueman. The aircraft shown is Noel Mitchell's white and green silk covered stunter. This was in use in the middle to late 1950s. It is a pity that the image is from the days of black and white photography, but no matter how good the photo was, it could not have done justice to the stunning workmanship and finish of this model. The construction was perfect, and like all of the Noel's work the finish impeccable. It provided a standard for us all to aim for.

Jim Stivey's Turf racing day was held on the 13th of March. For those that might have forgotten, this is a race day flown over grass that allows several classes of racers to compete with each other. Typically, Vintage A, Classic B, Bendix and PB Rat. Two heats are run per class. The rules have changed each year as Jim has struggled to come up with a scoring formula that rewards both performance and consistency. In the past this has not always been successful as an emphasis on consistency saw some very fast (and quite consistent) performances beaten by far slower times where the heat times had been manipulated to just a few seconds closer.

This year it has been perfected. Jim has refined his method of scoring with a clever new concept. The fastest

heat time on the day in each class is taken as the class record and counted as 100%. Each team's two heat times of the day are averaged and calculated as a percentage of that fastest time. This process rewards both performance and consistency. All the calculation is made simple using a laptop computer and a spreadsheet program that has been painstakingly refined by Jim's pal Brian Kelleher. Brian is a carpenter by trade, but computer expert by inclination. He deserves a round of thanks from us for his efforts this time. I believe that he spent 28 hours working on the program to get it just right.

Jim Stivey, of course should get a pat on the head too for his endless efforts on behalf of aeromodelling, and the Turf racing day is just one example of his activities on our behalf. I'm constantly being amazed by the steady flow of ideas that Jim produces. His mind is never still. I think that I may have confided this before, but if you find him on the flying field and look closely, you can see his ears pulsing gently. That isn't the wind. It is caused by the mighty Stivey brain endlessly churning over new ideas like a concrete mixer on steroids. Well done Jim.

The day was concluded with a well deserved win by Letchford/Walton with a score of 98%. In second place was Stivey Adler and third was Fry/Taylor. The ACE Models 'Stop the Clock' prize was won by the team of McMillan/Morrow. Thanks to Scott of ACE Models for supporting the Turf Racing day again. Putting aside the success of the scoring system, I can't say that I was greatly impressed by the turnout and performances. The lack of regular racing practice showed in the generally low times, inconsistent performances and broken models. As a precursor to the W.A. Nationals, it did not look too bright for many of us in the coming competitions.



APS Juggler design circa 1950. photo from Alwyn Smith. It has an OS Max .25 and Master 9 x 4 prop. This design was very popular in the early 1950s, usually powered by Frog 500 (.29 cu in.) engines. (For more on this see Ray Sherburn's comments in the TARMAC notes for April & May last year.)

Some things seem to keep coming back. One such is the subject of fitting canopies. Although I have passed on this message before, I was asked just recently to explain how I go about the job, so I thought that it must be about time to repeat the explanation of what I do in print (it works for me).

I sit the canopy in place on the plane and estimate roughly what has to be cut away by eye. I then trim away some of the scrap with small sharp scissors (a bit at a time – don't try to take it all off in one go). When it starts to look close, I then hold some sandpaper rough side up tightly over the fuselage and work the canopy back and forth until the underside conforms to the shape of the fuselage. If the fuselage has a raised turtle deck behind the canopy, I cut into that and lower the surface until the canopy lies flush with the woodwork. It doesn't matter if there is a bit of a gap behind the canopy at this stage. After painting and detailing the area that will be covered (hopefully forever) by the canopy it is time to fix it permanently in place with glue.

There are plenty of glues that you might use and it is hard to say which is the best one to attach canopies. It could depend on your building style, but I just use thin Cyano (Superglue) because it is quick and effective. A lot of folks have been turned off this because Cyano will often fog the inside of the canopy and make it look unsightly. I get around that problem by brushing Zip Kicker (cyano accelerator) around the inside edges of the canopy. Wait till it dries, and polish the inside of the canopy with a soft cloth to remove any marks. Then hold the canopy firmly in place (if you have cut and fitted it correctly there should be NO gaps between the canopy edge and the fuselage). With a fine feed tube in the Cyano bottle, just put the tiniest drop of glue around the edges. As the glue wicks under the rim of the canopy the Zip Kicker sets it off fast and there is no smoky residue. Work your way right around the canopy until you can see that it is sealed all the way around.

Finally, mask the outside of the canopy with tape or frisk film to cover all the bits that you want to remain clear, fill any gaps around the edge and install any fillets that you need to blend the shape perfectly to the fuselage with a mixture of micro balloons and laminating epoxy made into a very dry paste. When that has properly cured (usually at least 24 hours) sand the finished product to get rid of any unsightly lumps and bumps, remove your masking and re-mask the canopy to expose a narrow strip of clean canopy material before painting the model. That makes sure that all the raw edges of the epoxy fillet material are covered with paint when the job is finished. After the final painting, off comes the masking leaving a perfectly clean canopy.

If when you first take the new plane out into the sun, there is a mist of condensation inside the canopy, that can be disposed of by carefully drilling a tiny hole (1 mm is OK) in the back of the canopy to let the area breathe. Done carefully it is almost invisible and works every time.

Finally, I feel a powerful compulsion to remark on the comments about motor cycle use on the flying field in the first MAAA newsletter for 2004. Firstly, I must assure you that I do try to control the urge (that strikes me quite often) to insert items in these notes that I think are funny, but might encourage irresponsible or dangerous activities. But the stern comment in the MAAA notes about stopping children riding motorbikes on or near flying fields brought an instant recollection of the 1950s aeromodelling film shown recently at a TARMAC club meeting. It showed an interesting sequence of free flight flying at Lake Pinjar, where we saw an adult on a motorbike charging across the rough reed covered field. Of course, he was doing it in a safe and responsible adult way by standing on the seat so that he could see ahead more clearly. (I am sure that must have been the reason.)



Here is a photo supplied by John Tidey showing him holding his Enya .35 powered 'All Australian'. This was built for competition in Classic Stunt. He sends his best regards to Ken Taylor and all the guys in W.A., Victoria and Queensland.



Geof Spehar circa 1962/
Claremont W.A.
Plane built by:
Stuart Weston, best mate

Here is a photo of Geof Spehar. Another in my series of 'Past Modellers' photos. Geof, or 'Yank' as he was known to some of us because of his American origins and accent, was like most of us at the time (1960s) interested in combat, primarily because it required a simple airframe and even a brick flew. He built a beautiful little alloy winged OS60 speed ship that he still has. The plane that he is holding here was built by a friend Stuart Weston who at last check was a pilot for Qantas. At the time of the Kremer prize for man powered flight Geof built a pedal powered aircraft in an attempt to master that challenge. The aircraft is still hanging up in the West Australian Bull Creek aviation museum. He is now living back in his native California in the USA.

I am" is reportedly the shortest sentence in the English language. Could it be that "I do" is the longest sentence?

Charlie Stone
Email cestone@bigpond.com

VH4706

Get well soon.

On behalf of our readers, the editor wishes a speedy recovery to full health to some subscribers that have had medical problems recently.

Best wishes to John Taylor, Geoff Potter and Robin Hiern.

QLD STATE CHAMPS 2004

The committee of Aeromodellers of Logan City Inc are pleased to advise that the Qld State Control line Champs for 2004 will be held at the ALC field over May 1,2,3 long weekend.

All FAI events will be offered but other events (MAAA/MAAQ) will be subject to the requirement for 5 entries before the event will be conducted. Entry forms will be sent out to all C/L clubs by Brian Burke who will again act as event co-ordinator and registrar. If necessary you can contact Brian on (07) 32001308.

CLASII CONTROL LINE EVENTS CALENDAR 2004

Information on club activities can be obtained from President Mark McDermott 07 32889263 or Secretary. John Taylor 07 33927679 email johnndt@iprimus.com.au

Note!

Due to road construction commencing on the new Bridge adjacent to field, disruptions to flying field have already taken place, Therefore all Flying activity at Clasii field has been suspended probably till after Christmas. Fliers are advised not to come to our field again until further notice. New and improved fields and surrounds will be the positive outcome from this activity
John D. Taylor Secretary/Treasurer

Subscribers to ACLN can have the latest edition of the newsletter (in colour) emailed to them as a PDF file at no extra charge. Simply send a request for this service to the editors' email address which is on the front page.

Back issues of this newsletter can be found on the following web sites.

<http://www.vicstunt.com/>

<http://www.dkd.net/clmodels/>

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Pitch V Speed Graph

From Lance Smith

This graph was developed after discussions with Robin Hiern about the best prop's for Classic B and his suggestion that it would be easy to develop a graph to show the expected speed from RPM and pitch data. Robin showed me his graphs and with a bit of prompting I developed a formula, incorporating 85% prop efficiency, popped it into a Excel spread sheet and graphed out the results for a range of pitches.

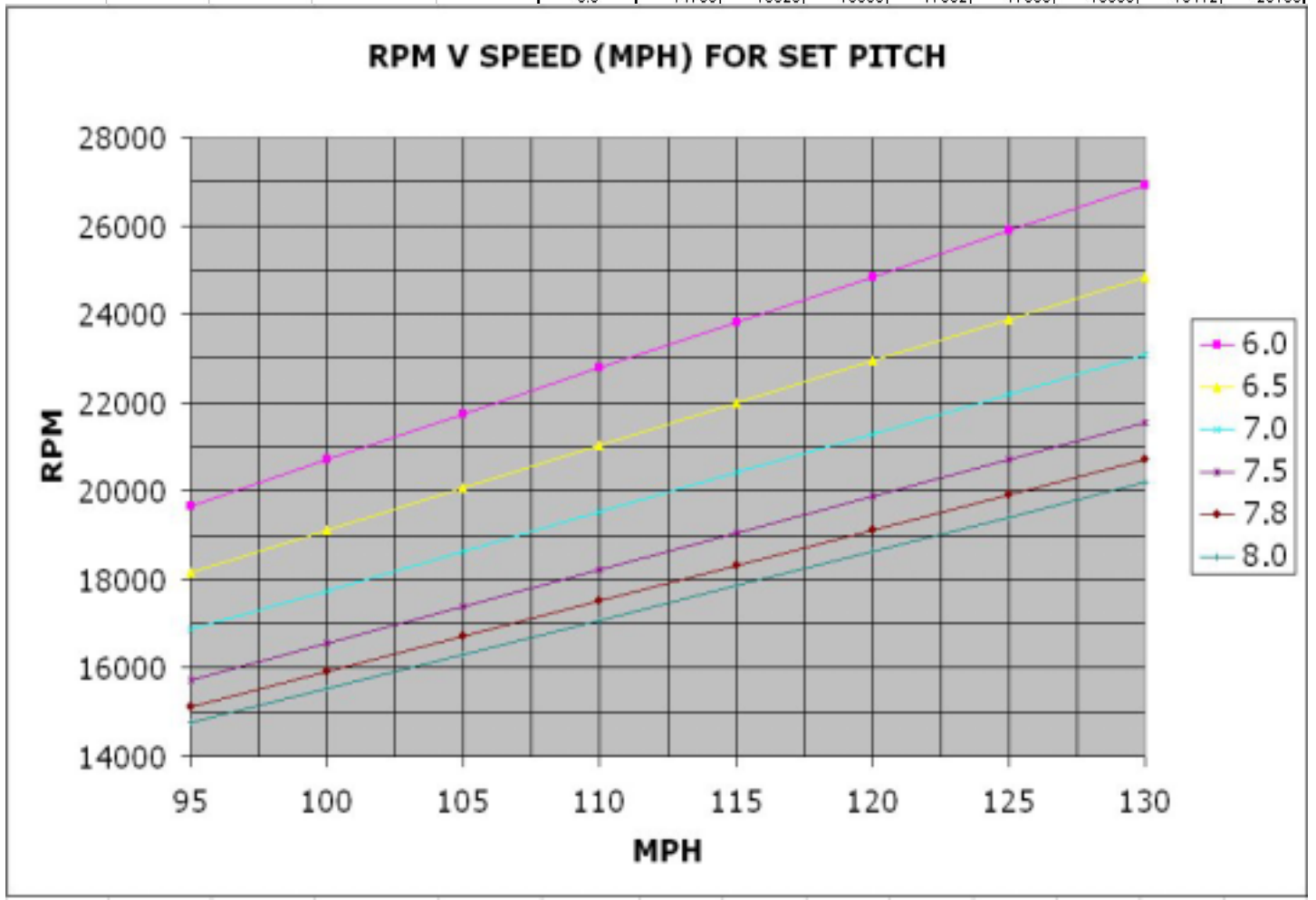
The formula is simple, $RPM = 1242.353 \times (MPH/PITCH)$ where pitch is in inches.

The formula constant assumes 85% prop efficiency, but assumes nothing about prop diameter.

The formula strongly suggests that we may be able to get a little more speed out of the OS 25's by propping them up just a little from the APC 7x7's but field testing is required just to ensure we can get range and speed. !!!

Revs from Pitch and Speed (MPH)

RPM =	18990	MPH	107.00							
		Pitch (inches)	7.00							
		PITCH/MPH	95	100	105	110	115	120	125	130
		6.0	19671	20706	21741	22776	23812	24847	25882	26918
		6.5	18157	19113	20069	21024	21980	22936	23891	24847
		7.0	16861	17748	18635	19523	20410	21297	22185	23072
		7.5	15736	16565	17394	18221	19049	19878	20706	21534
		7.8	15131	15928	16724	17520	18317	19113	19910	20706
		8.0	14753	15529	16306	17082	17859	18635	19412	20188





LINING THE LINERS

100 years after Andre Citroen declared his then new spun cast iron liners to be the best for performance engines, Derek Pickard looks at how far we've come in the choices for liners.

Cast Iron

The oldest and most trusted. Good old C.I. is easy to make, beds in quickly, stable, long lasting and very friendly to oils. 100 years old and very good. Spun cast iron is even better.

Steel

This refined form of C.I. has only a few advantages over the latter. The variations, such as adding a small amount of lead, slightly improve model aeroplane use but at a cost. At our application, it has not proven totally successful and became bypassed for more complex solutions.

Aluminium

Using a variation of running directly onto the aluminium alloy has long been the dream of many engine makers because of the potentially huge cost savings. But even with the advantage of synthetic oils, huge shear strength, this is a minefield where next to no one has recorded successes.

Chromium

This was the first of the performance coatings which is usually put onto a liner of another material (iron or alloy). Origination is jointly claimed from the 1930s by Britains' Rolls Royce for aero engines, Germany's Auto Union for racing car engines and Italy's Moto Guzzi for racing motorcycle engines. Believe who you want as they were all excellent engineers heavily involved in R&D.

Chromium is hard and has to be plated onto a metal capable of taking it with structural integrity. The gains are reduced friction and wear but oil retention is a problem. The popularity of this surface for all kinds of applications in the 1960s soon dropped away. For model engines, ABC means the alloy/bronze/chromium make-up of the piston-liner relationship which can work well but cheaper variations soon became more popular.

Honeychrome

In the 1970s, the German Mahle company introduced a variation of chromium plating which had a porous surface with the micro-appearance of a honeycomb. Fast with good oil retention, the expensive process was never popular.

Nickel

In model planes, this usually means ABN (alloy/bronze/nickel) where the nickel is the friction surface. Put simply, it is cheaper and more practical than chromium to both make and run. Many users report excellent performance and durability.

Beryllium

This very rare metal is used in conjunction with another material, such as copper, in advanced speed model engines to provide a high performance liner. (Beryllium is a dangerous and human-unfriendly nasty material. Stay away.)

Nicosil

The German Mahle piston company introduced this around 30 years ago for advanced motorcycles and it is still highly respected today; even the Honda sports car uses a variation. As the name implies, the surface coating includes nickel and silicon and has the appearance of a dull chrome which goes directly onto aluminium. This is a popular high performance material but beware to never hone as its porosity can retain fine abrasives. Many of the recent Iron Curtain stunt engines I've examined have a similar bore finish achieved by a pirated process.

Mahle licence the use and a small company in Melbourne is set-up to do this.

Plasma?

This mis-named liner is really something else. As any science student knows, plasma is an electrically charged gas and not a solid material so is incapable of supporting a reciprocating piston. In this case, plasma is used as a medium to apply materials such as metals not unlike the principle of chromium plating or anodising. The correct way to name end product is by the process as well as the components in the finished surface, such as say Keronite silicon/ceramic. See Keronite.

Keronite

This patented process was developed a decade or two ago by a UK specialist (called Keronite) for various applications, notably 2 stroke racing motorcycles, and is now used for an incredible number of high performance situations including Formula 1 engines. The electrolytic process is done at a molecular level where the plasma has the potential to apply exotic variations of alloys and other materials; even a centrifuge system can be used. Popular 2 stroke mixes include silicon with ceramic which is around 4 times harder than Nicosil yet still has excellent thermal conductivity and oil retention.

The company licenses various operators around the world.

Oddball

The huge US marine and stationary engine industries has seen various cylinder linings introduced over the years but they have mostly been for production economies and few are preferred for increasing performance.

Plain Versus Rings

With the ability of model engine makers to precisely fit plain sealing pistons into liners/coatings with matched heat expansion, this method will continue to be popular for our application. As an aside, all the world's most researched and expensive high performance piston engines (GP bikes and cars) use rings.

100 Years Development?

It's amazing how the spun C.I. which has been used for most of the last century and still rates as very good. Metals, mixes and methods come and go, but Andre Citroen was obviously a great engineer.

Latest Nats News

Registration for the Nationals is on from 2:00pm to 6pm Saturday April 17th at the Aero Club in the Busselton Airport or for RC pylon entrants at KAMS field from 9am to 3pm Monday 12th April.

Each entrant must register with the Treasurer Ross Cant to confirm their entry, make any financial adjustments necessary, and receive their Registration pack. The Treasurer will be available on other days for entrants who arrive later.

Radio event entrants should bring their Tx's and frequency keys to Registration where a free check will be performed, to ensure the Tx complies with its attached MAAA sticker and frequency key. Tx's that do not have an MAAA sticker may not be used in any Nationals event.

Bandwidth testing and issuing of MAAA stickers will be available at the Busselton Registration day but there is a \$22 fee for this service. RC Pylon entrants must arrange for any certification of TX's to be completed before the event as bandwidth testing will not be available at KAMS Registration day.

C/L Teamrace models must be processed prior to the event. Processing will be available on the Busselton Registration day.

Old Timer models should be processed at the Busselton Registration day. It will be possible for entrants who cannot attend Registration to make arrangements with the CD Paul Baartz for models to be processed at the field.

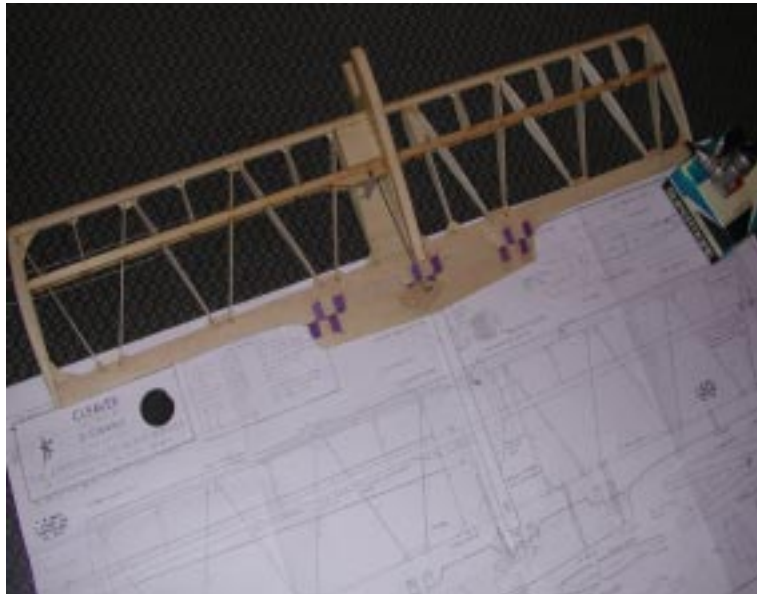
If you have any problem with any of the information presented here please contact me by return email, or phone (08) 9227 9131, or post to AWA, PO Box 670, Mt Lawley WA 6929.

Thank you
Ross Cant

Nats entry numbers for Control Line events are as follows.

F2C	7
Goodyear T/R	9
Bendix	9
Vintage A T/R	12
Classic B T/R	7
Combined Speed	10
F2B	7
Open Combat	9
Vintage combat	16
Vintage Stunt	5

Control Liners are well represented in Night Scramble entries



Vintage Combat is a new event at the Nationals but it is regularly flown in W.A. With sixteen entries there will be plenty of nostalgia and a wide range of old favourites like this almost complete Cleaver taking to the air.

MODEL RACING SERVICES



*** Services ***

- Motor Modifying and Blueprinting for all competition classes, ie. Pylon, Control Line, R/C, FF, Aircraft, Boats, & Cars,
- Rebrush Conrods - Replace Conrod - Replace Piston - Diesel
- Conversions - Motor Repairs - General Machining - McAnelly Pans.

*** Kits ***

- "Arrow" - 2cc - 2.5cc speed kit includes pan, pre cut wood, hardware, plans etc. **\$90 .00**
- "Ol Blue" - 2cc Mini Goodyear - pre cut wood, hardware, wheel, shutoff, plans etc. **\$69 .00**

COMPONENTS FOR THE COMPETITION & SPORTS MODELLER

- | | |
|--|-----------------------------------|
| Goodyear Shut Offs | Venturis |
| Head Inserts ¼ x 32 & Nelson | Check Valves |
| Wheels 27, 40, 50 & 60mm | Stunt Mufflers |
| Racing Undercarriage Leg & Box Sets | Line Reels |
| Prop Nuts, Prop Drivers & Extensions | Piston Rings |
| Elevator & Flap Horns | Pan Hold Downs |
| "Adjustable" Team Race & Stunt Handles | Alloy Wings |
| Tank Valves - Pressure & Suction | Exhaust Extensions |
| Single Blade Counter Weights | Mono-Line Torque Units |
| Mono-Line Handle Units | Single Strand Lines |
| Paxalon & Steel Bellcranks | Bobbin Bellcranks |
| Magnetic Prop Balancers | Time Traveller valves and fillers |

“ Plus Many More Items ”

For Mail Order or for complete price list to :-
Robin Hiern Model Racing Services

P O BOX 976 CRANBOURNE 3977 VIC
Phone 03 59 96 0339 Fax 03 59 96 0307

Hrs. Monday to Friday 8.30 a.m. - 7.00 p.m. Visitors by appointment

CONTEST RESULTS



Frankston on 14/03/2004.

SIMPLE RAT RACE

	rd 1	rd 2	final
1. C.Ray/J.Ray	104	dns	210
2. H.Bailey/P.Roberts	104	100	187
3. G.Wilson/M.Wilson	95	dns	177
4. J.Hunting/K.Hunting	89	91	

GOODYEAR

	rd 1	rd2
1. G.Wilson/M.Ellins	3:56.63	7:04.53
2. M.Wilson/A.Lumsden	4:51.16	5:08.75
3. H.Bailey/P.Roberts	5:06.31	5:28.09
4. J.Hunting/K.Hunting	7:10.63	dnf

Vintage 1/2A T/R

1.P. Camps/S.Pilgrim	8:44.81
2.S. Rothwell/J. Nolan	8:55.35
3.A. Heath/G. Patterson	42laps DNF

Jnr Simple Rat

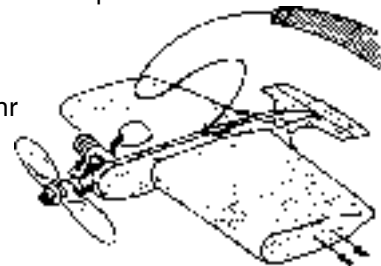
1. Mathew Redman	177 laps
2. Lachlan Hines	154 laps
3. Mathew Littley	141 laps

F2D Combat

1. Micheal Comiskey Jr
2. Micheal Comiskey Snr
3. Robert Owen

Slow Combat

1. Rod Smith
2. Byron Sympson
3. Robert Owen



2004 VICTORIAN C/L STATE CHAMPS UPDATE

The dinner on the Sunday night 11/04/2004 has been changed to the Waltzing Matilda Hotel, cnr Springvale & Heatherton Rd's Springvale Sth, Melway 88 K1.

Entries required by the 8th April 2004, don't leave it to the last minute, please send them to CLAC, PO BOX 298 SEAFORD 3198.

RULE BOOKS

Printed A4 size copies of the Control Line FAI & Australian rules are available in a spiral bound folder from
CLAC,
PO BOX 298,
SEAFORD, 3198.

The cost is \$8.50 for Book plus \$2.50 postage.

Please make cheques payable to "Control Line Advisory Committee"

Hunter Valley Championships Results

Clasic Stunt and F2B results are published elsewhere in this newsletter .

Saturday morning was very overcast with only enough time to run 1/2A T/R before rain began to fall. All C/L events were run on the Sunday but minus a few contestants in the T/R events. Sorry I can't give you any heat times.

Grant Potter

Combined Speed

Not run

Vintage A T/R

1.P. Camps/S. Pilgrim	Final
2.R. Harvey/G. Knight	6:43.75
3.S. Rothwell/D. Hines	6:50.28
	65laps DNF

Classic B T/R

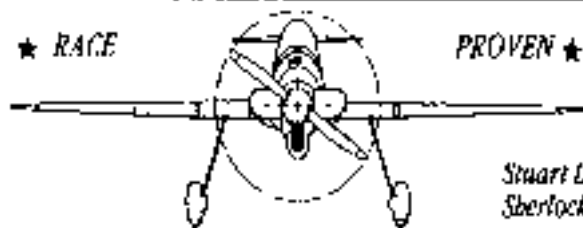
1.R. Harvey/G. Knight	7:52.03
2.R. Smith/R. Bucholz	8:17.22
3.B. Hoggan/G. Potter	10.22.91

SUPERCool RACING PROPELLERS

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F2ACW01	6 X 6.2	Bendrix01 9 x 6
F2ACW02	6 X 6.3	Bendrix02 8.5 x 6.5
F2ACW03	6 X 6.4	
F2C04	6.3 X 6.1	
F2C05	6.3 X 6	<i>Supercool</i>
F2C06	6.8 X 5.8	<i>First in Racing</i>
F2B	11 X 5	

For Sale

ENYA 09 - III (bench run only) \$40
 OS 29 Twinstack - early 50's vintage VG cond. \$75
 OS Max III 35 - 1967 vintage New un-run \$140
 ENYA 35 Model III - B 5224 (round venturi)
 bench run. with spare venturis & HC head \$70
 ENYA 40 Model 6002 R/C Near New \$75
 All prices plus postage.
 Please phone BOB ALLAN on (03) 5145 5548
 or email at bobshirl@bigpond.com

I have recently purchased 250g of Ferrocene (98%) (Diesel Ignition Improver) from Sigma Chemicals. Yes it was much cheaper per gram than buying the 50 grams I had intended to purchase, but as it is used at the rate of 0.3 – 0.5 grams/litre it is enough to make up between 500 and 800L of fuel!!!! I am keen to know if anyone else would be interested in using the stuff. I am happy to sell it at cost, which would be \$0.40/gram. It's a very effective replacement for Tetra Ethyl Lead (TEL), there is no disadvantage to adding too much. ie It does not cause the engine to overheat, (other than throwing money away) and it is nowhere near as toxic.

I'm happy to weigh out 10g+ quantities if anyone is interested
 Lance Smith Tel Bus 03 97904109
 Home 03 9708 8315

email: smithlw@optushome.com.au

Super Tigre ST46 ex-Doug Harlow, excellent performance, complete with competition muffler, ready to go. \$150.
 Triathlon competition plane 36 inch (suit PAW 2.5) good \$25,
 Burke Mako Sport 46 inch stunter with excellent OS20 and muffler (flies good) \$100,
 Grinham-built 36 inch sport plane with Webra 19 and muffler (all excellent) \$100,
 Vintage Flite Streak 42 inch with new PAW 2.5TBR and muffler (with vintage docs/plans), \$125
 Vintage Ringmaster 42 inch for PAW 2.5 good \$25,
 Taylor-built Vintage Chief 54 inch with Fox 35 and muffler (all excellent) with vintage docs/plans (3rd in State Vintage) \$250,
 Taylor-built All-Australian Mk2 with OSFP40 (MRS) with Vintage doc/plans, 4th in Nats Vintage \$230,
 Also night scrambler Tomboy with Mills 75 specially built to pack away in transport box (superb) \$195.
 Derek AH 03 9889 1149.

Hi Guys
 I have few second hand things for sale so if you are interested or if you can forward to other members of your club that will be great.
 So if you are interested contact me on 0410-133 238 or 9558-0443 or email me back. shaun@psychobj.com

* Midwest CAP 232 2 meters(80.5") wingspan, 2 meters length fully 3D capable beautiful plane in excellent condition \$580 only.

* F4U Great Planes Corsair new plane for .40-.52 engines \$300 ONLY!!
 * Diablotin for 46-61 engines \$150\$
 * Very strong gasoline engine Tartan 50cc flat twin new condition \$700
 * ZDZ 80CC flat twin gasoline engine very little used - new condition \$1200\$ (50% discount)
 *ZDZ 80cc R2 twin inline engine (double electronic ignition). Very powerful piece of art 8.1HP!! brand new in a box (never been used) \$1200 ONLY!!
 *ZDZ 40cc RV single (used for only 1 hour !!) \$600 ONLY
 *Webra 6.5cc for boats no muffler \$40
 *HP 61 engine (made in Austria) no muffler \$45
 *O.S 15 no muffler \$40
 Thanks
 Shaun

WANTED

Georgiadis Multi Function Valves, any condition.
 Please contact Paul Cameron at LPACAM@bigpond.com
 or phone 0408 367 080.

I am after a Rossi RI RE 70's TR diesel, a Mk II, I guess (correct me if I am wrong) in good running order, to purchase at a reasonable price or exchange, it is for a mate of mine, he doesn't want to use it for F2F, as he is no longer a racer, but wants one for his collection but will run it in a TR style race style model, to my mind that is an F2F so there may be hope !!!...
 Any ideas and info to the address below.
 Cheers
 Duncan Bainbridge
 31 Glyn Road
 London
 E5 0JB
 Email duncan.bainbridge@easynet.co.uk

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