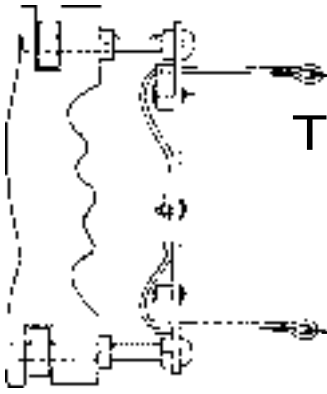


\$2.00



THE VOICE OF CONTROL LINE
AEROMODELLERS FROM
AROUND AUSTRALIA

Number 73



Produced by the Victorian Control Line Advisory Committee

December 2003
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**Copy Deadline for next issue is:
Wednesday 21st January 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.

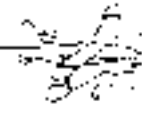
Best of all is to send it on a 3.5" disk as a Windows Write, Word for Windows, or as an ASCII TEXT FILE or use Email

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.

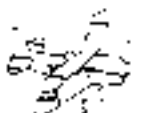
Email address:- acln@ozemail.com.au



COMING EVENTS



COMING EVENTS



CONTROL LINE CONTEST CALENDAR 2003/2004

DEC 7	C.L.A.G. Country Flying Day	Moe
DEC 7	Aust "A" Team race, Classic "B" Team race, Bendix.	SMAC
DEC 14	FAI Team race, Combined Speed. 2.5cc Open Combat, 1/2 A Team race.	CLAMF
DEC 29	MASA CONTROL LINE STATE CHAMPIONSHIPS	MONARTO
	2004	
JAN 2	MASA CONTROL LINE STATE CHAMPS FINISH	MONARTO
JAN 11	C.L.A.G. Country Flying Day	Moe
JAN 26	FAI (Hearns), Novice & Jnr Aerobatics, Classic Stunt, Vintage "A" Team race, Classic "B" Team race.	KMAC
FEB 1	Simple Rat race, Simple Goodyear.	SMAC
FEB 1	C.L.A.G. Country Flying Days	Traralgon
FEB 15	FAI & Combined Speed, 1/2 A Combat, Mini Goodyear.	CLAMF
FEB 22	Vintage Stunt, Class 2 Team race, Bendix, Classic Stunt.	KMAC
MAR 7	Hand Launched Glider.	SMAC
MAR 7	C.L.A.G. Country Flying Days	Traralgon
MAR 14	FAI Team race, Goodyear, Simple Rat race.	CLAMF
MAR 28	FAI, Novice & Jnr Aerobatics, Vintage "A" Team race, Classic "B" Team race, Classic Stunt.	KMAC
APR 4	C.L.A.G. Country Flying Days	Maffra
APR 4	Simple Combat.	SMAC
APRIL 9 -11	VMAA CONTROL LINE STATE CHAMPIONSHIPS	CLAMF, KMAC, CLAMF.

APRIL 17-24 57th AUSTRALIAN NATIONAL CHAMPIONSHIPS
BUSSELTON WA

APRIL 25 Classic Stunt, KMAC
MAY 2 Vintage "A" Team race, SMAC
Aust "A" Team race.

MAY 2 C.L.A.G. Country Flying Days Knox
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

WMAA 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

CLAS 2003 CONTEST CALENDAR

DATE	CLUB:	EVENT:
7th Dec	Doonside (at Kelso Park)	F2B Aerobatics
14th Dec	KMFC	Christmas Party and Fun Fly

"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
H.S., Wicks rd, North Ryde. NSW."

"SAT (Sydney Aeromodelling Team) - Kelso Park North,
Henry Lawson dr. 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."

CLASII CONTROL LINE EVENTS CALENDAR 2003

*Flying field at Leichardt Park just past One Mile Bridge
Ipswich*

Members fly most Sundays between 9am and 1pm. Club
competition days are held on the second Sunday of the
month. Visitors are most welcome but please bring your
F.A.I .card to prove current MAAQ membership. This is a
Council Park with permission given to fly only control line
planes, no radio and only between the hours of 9am to 5pm.
Further information on club activities can be obtained from
President Mark McDermott 07 32889263 or Secretary.
John Taylor 07 33927679 email johnndt@iprimus.com.au

December 14th. Christmas Breakup and Fun Fly.
January 11th. 2004 Fun Fly

Note!

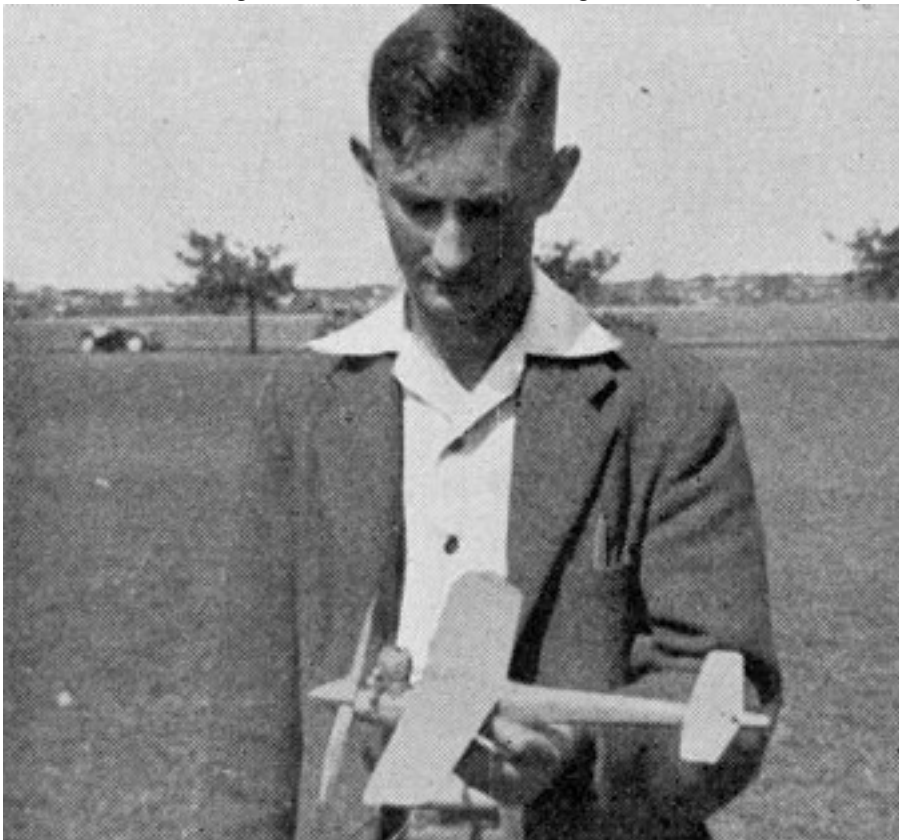
Due to road construction commencing on the new Bridge
adjacent to field, disruptions to flying field have already
taken place, Therefore all Flying activity at Clasi field has
been suspended probably till after Christmas. Fliers are
advised not to come to our field again until further
notice. New and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

TARMAC Notes for October and November

Our last club meeting was graced by several visitors who came along to see an aeromodelling film in which several of them appeared. The show (made by amateur film maker Percy Peet in 1951) featured many of the most active modelers of the time flying control line and free flight. There was even a short section on full sized gliding with brave men flying an auto towed primary glider at Caversham (a world war 2 airstrip in WA).

The film was generously loaned to us by Kim Ashton whose parents Rod and Irma were among modelers recorded flying at a number of sites around Perth. Also seen in action were: Alex Cunningham, Dicky Gibbs, Don Hall, George Pappas, Brian Sadler and Ray Sherburn. Although the camera shy Noel Mitchell managed to avoid being photographed himself, one of his earliest team racers was clearly shown.

Ray Sherburn also brought along an amusing short video that he had put together some years ago starring his son and TARMAC member Mark as a daring fetchermiter recovering a lost free flight model from a lion park. It was very well done; but we didn't get to see the alternative ending where, (although fortunately the model is not damaged), Mark is eaten by the lion, thus making life a lot easier for the vintage combat fliers of today.



Dragged from the TARMAC archives is this photo of one of the participants in the Percy Peet film mentioned above. Don Hall shows his speed model. Don, who ran 'West Coast Hobbies' with Rod Ashton, later gave away modeling in favour of motor racing involvement and ran a famous West Australian auto speed shop for many years.

The WA State Championships for Vintage A team race and a trial of Classic B team race have just been held. There were quite a few spectators and few entrants that we don't see a lot of these days. I was especially pleased to see Garry Turna, who not only flew, but brought me a good stock of old photos for addition to the TARMAC archives. The day was marred somewhat by a strong and gusty wind that seemed to change direction through about 90 degrees with little or no warning. The wind along with unmown and slightly longer than optimum grass caused a few ground handling problems with some consequent breakages. If it hadn't been for the foresight of Richard Bellis, who was the only guy there smart enough to have taken some glue, and generous enough to lend it out, we would have been in lots more trouble. Richard and his bottle of zap prevented several retirements quite early in the day.

Vintage A was the first class run, and for this there were ten entries. Most (but not all) of the racers sounded to be reasonably in tune, but the stop watch tells another story and the times were really not all that impressive when compared against those set here a few years ago. It could be something to do with the lack of regular racing. The win was taken by Fry/Taylor using a very smooth flying and well trimmed Pluto. I must compliment Alasdair on that, and I wish that I had used one. The results were as follows:

Team	Heat 1	Heat 2	Final
Fry/Taylor	4:05.00	4:01.91	8:34.10
Stivey/Adler	4:16.00	6:30.00	8:58.22
Kirton Stone	DNF	3:45.62	DNF
Letchford/Morrow	4:23.00	4:50.90	
Turna/R Lecnys	6:10.00	4:43.65	
Hoogy/C Lecnys	4:49.00	4:54.88	
Letchford/Walton	4:55.63	4:49.00	
Bellis/Gannon	4:55.00	DNF	
Sherburn/Dyson	7:13.00	-	
Fry/Parks	DNF	8:21.70	

The three entries in the Classic B team race trial event.

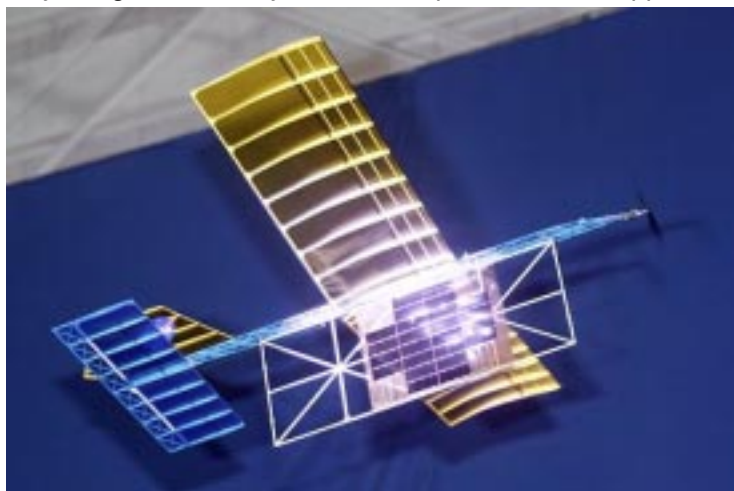
From Left to Right they are the Kirton/Stone Dalesman (Eta .29 6C power), the Fry/Taylor Crescendo (Eta .29 replica power), and the Sherburn/Dyson own design (OS .25 FP power). Photo supplied by Adrian Dyson.



SherburnDyson that showed great promise. It looked very slick and attractive, but ended up being another victim of the wind. There were also two Eta .29 powered entries. Fry/Taylor had a Crescendo powered with one of the replica motors and Kirton/Stone a Dalesman featuring a genuine original 6C. No one had a perfect day with these larger (and noisier) models as Fry/Taylor suffered from a tank that came loose during the final and Kirton/Stone had range trouble. Our problems stemmed from insufficient preparation and an engine that had not been sufficiently run in to be completely free. I also had the unexpected thrill of an engine fire during a pit stop that took my attention for a while. Still none of us were expecting perfection the first time out – and if we were, it certainly didn't happen. Norm was pleased to note that we had the first 'All Eta' final for ages (perhaps ever). The results for B class were as follows, but don't pay too much attention to the times as I am sure that they will improve:

Team	Heat 1	Heat 2	Final
Kirton/Stone	4:19.77	4:11.20	8:19.60
Fry/Taylor	4:06.84	-	9:31.08
Sherburn/Dyson	4:10.06	-	-

Something that should be of interest to most aviation nuts is the news that researchers from NASA have demonstrated a model aircraft that flies solely by power beamed to it from the ground. The aircraft is electric powered and radio controlled. The electricity to drive it's motor is derived from a panel of infrared-sensitive photovoltaic cells fixed to it's underside that converts energy beamed to it from below by an invisible, infrared laser. This is believed to be the first time that a plane has been powered only by laser energy, and could lead to the creation of aircraft that do not need to carry fuel, yet can stay in flight indefinitely. This concept has obvious applications for both scientific and military use.



With a laser beam aimed at its panel of photovoltaic cells (similar to a solar panel), this five foot wingspan model plane makes the first flight of an aircraft powered by a laser. This aircraft weighed a mere 11 ounces and was flown indoor for the test.

I hear that the F2C team of Bondarenko/Lerner of the Ukraine have set a world record final (200 laps) time of 6:21 and are now using a retractable wheel to improve their model performance. The principle of removing the undercarriage from the airstream to lower drag dates back to the 1930s when it was first widely used in full scale aircraft. The benefits are higher speed and better range. The costs are an increase in weight, expense and complexity. Similar benefits and costs are there for models, although the gains can only be quite small. Nevertheless, as model speed increases the potential benefit of better streamlining increases exponentially and retractables are a very tempting area for experiment.

As far as I know, the first use of retractable undercarriages in control line team racing was in the early 60's when Kjell Rosenlund's "Miss FAI" design was fitted with one.

The general principle was the same as that now being used by Bondarenko/Lerner, but where they use a positive over-centre down lock, so that the wheel cannot be pushed rearwards once down, Kjell relied on having the landing gear leg canted forward steeply so the weight of the model would serve to keep it extended when touching down.

A picture of the F2C model of Bondarenko/Lerner who are now successfully using retracts. The wheel reportedly comes down just before the model touches down not half a lap away from the pitman. At a line tension of 5.5Kg the bellcrank pulls inboard and acts on a lever which retracts the wheel to the rear. When the tension drops back through about 5Kg as the model slows, the wheel re-appears. An "over centre" lock is built in so that the wheel cannot be pushed rearwards once down. I don't know the weight penalty, but would expect it to add 20 or so grams.



If you are given to reading American modeling publications such as the excellent 'Stunt News', you will (if you haven't already) occasionally run across references to a metal filled epoxy product called JB-Weld. It is reputed to be very useful stuff. The Yankees seem to use it for everything from engine crankcase repairs to keeping their false teeth in. I tried to get some a while back and in ignorance of what I was buying I ended up with 'JB weld Quik'. I wasn't happy with that product and don't recommend it, but have since found out that the correct slow setting JB-Weld is now available from K-Mart stores in Australia. That works very well and if you want some, now you know where to get it.



Here is a picture of a freshly built model just seen at the TARMAC flying field. It is the Hearn's hobbies 'Demon'. A popular design that was released as a kit here in Australia about 1950. This one was built here in Western Australia by Noel Mc Millan who also flies free flight and Pylon. Like all of Noel's models, it is beautifully built. It is powered with an Enya .29 and finished in clear over natural silkspan on the wings, with yellow Jap tissue on the fuselage.

The weather is starting to warm up (on the West coast at any rate) and we don't even have the heating effect of daylight saving, which as you all know, gets the sun up earlier. So you might not have much need for this suggestion for a while. Have you ever wanted to paint or epoxy something when the weather was very cold? As you know the stuff takes forever to cure to the point where it can be worked. One way to safely speed things up is to make a workshop incubator. The same sort of thing that is used to keep little chickens warm without cooking them. All you need is a large cardboard box

and a low wattage light globe. Cardboard is a very good insulator and incandescent light globes get fairly warm when in use, so if you put your light in the box, (hang it from the top and use a lead lamp globe holder for safety) it will soon warm up nicely. Remember the higher wattage the globe, the hotter everything will get, so trial the incubator with, say, a 25 watt globe and leave it going for a few hours while you are close by so that you can check just what temperature it stabilizes at. The box will exclude draughts and dust and the job can be left safe and warm overnight to be ready to go in the morning. Save that tip for next winter. It really works.

There is a blue water Navy truism that goes -'There are more planes in the ocean than there are submarines in the sky.' I think that it could be right.

Charlie Stone

VH4706

Email cestone@bigpond.com



Hi Harry

The reason for this letter is to ask you to publicise my little quest. I'm well along the road of researching Gordon Burford's engines with all the GB's, Sabres and Taipans sorted and a number of draft chapters completed for the book that will follow. As there are only patchy published records of these engines that underpinned Australian aeromodelling for decades, any and all input on the subject is most welcome from your readers. In particular, I'm compiling a register of Sabre glowplug engines with serial numbers. Gordon numbered approximately 1600 Sabre 19/29/49 engines between around 1952 and 1954 as they left the factory. The photo shows Sabre 29 Mk 1 No 780 as an example. Anyone with a numbered engine is invited to add its details to the register, which will shed more light on the relative quantities of the engines made and the likely number remaining.



I can be contacted by E-mail at jillandmaris@picknowl.com.au or by phone on 08 8297 0736.

Also, I've just received the latest issue of ACLN. Good reading as always. Derek Pickard's tests on sport engines address an area seldom explored, that of suitable engines for general sport flying. Just for the record, I can add that a Marz 2.5 diesel can be expected to turn an APC 9x4 prop at 11,700 (up to 12,100 RPM for a really good one) and you can probably buy two Marz and a spare for the price of

some of the competition. Even the humble Taipan Tyro gave 11600 RPM on this prop in recent tests and at 129g (4.6 oz) is really rather handy in terms of power for weight and good manners. Along with a long list of other engines from the days of yore that are probably sitting around people's workshops doing very little, an enterprising Club might build up a stock of suitable entry-level engines at modest prices for prospective new members.

Your's in modelling
Maris Dislers

This photo relates to last month's article on John Walkers Dyna Jet powered Asymmetric speed model. Note Metering jet / flowjector outboard of the fuel pick-up. Holds the current record for "Sport Jet" class at 232.67 klm.

Hope you can include this article in the next issue of ACLN,
Bob Fry



Busselton Nationals 2004

The W.A. Nationals will run from Saturday the 17th of April for six days to the following Friday the 24th. These Nationals will have a slightly different format with all the R.C Pylon events being held the week prior (12th - 16th) at the Mundijong flying field just south of Perth due to field availability problems around Busselton .

The early indications are will have a good number of teams attending from all over OZ with the F2C Team Race attracting a lot of interest, also Vintage T/R, Classic B and Bendix events should have good support as well. Some of the local guys are having one last bash at Open Combat and the Vintage Combat is a local favourite and will have good entry numbers as well.

A late change has been made to the schedule of events that was initially posted on the MAAA web site. F2C Team Race has been moved back from Monday to Sunday and Combined Speed has been moved to Monday.

Busselton is a holiday town with a population over 10,000 and is just a 2 ½ hour drive south of Perth, (228 klm) It is located on a section of coast with beautiful sandy beaches and borders the edge of the wine making areas of Cowaramup and Margaret River. It is an ideal base to visit many of the tourist designations and places of interest in the South West of Western Australia

Schedule of events

Sat 17	Registration / processing Bussleton Airport (afternoon)	
	Hard stand	Grass
Sun 18	F2C Team race	-
Mon 19	Combined Speed	F2B Aerobatics
Tue 20	Goodyear Team Race	Vintage Stunt
Wed 21	-	Open Combat
Thur 22	-	Bendix, Vintage T/R
Fri 23	-	Classic B, Vintage Combat

The next Bulletin and entry forms are due in November.

The Nationals are during the second week of the school holidays so if you are booking accommodation in Busselton you would need to get in as early as possible. Accommodation has been reserved for the Nationals and bookings can be made through the Tourist Bureau on 08 97521288.

Bob Fry
57th Nationals C/L Co-Ordinator
0408206866
bob.fry@wpcorp.com.au

Fuels for F2C Competitions

Article by Chris Wee

Organizers dishing out standard fuel at the warm up pits, even if it is enforced, does not necessarily provide a level playing field. If the organizer is bent on giving the local lads an unfair advantage, the fuel at that moment could be slightly non-standard, a little or less DII3/TEL. Those with privileged information will know what compensating compression adjustments to make, whilst the remainder may cook up at the end of the 2nd tank.

I have commented against a standardized fuel formula for F2C.

It is for precisely the same reason that we need to formulate it around specific ingredients, and not blends, because Kero is such a variable product. Whilst almost all the kero that I have tried seems to work well for us, whether in Singapore, France or Moscow, we in Singapore are novices and not extracting the best from our equipment. On the other hand, the top teams such as some of the Ukraine, French and Russians at consistently at the cutting edge of performance with similar equipment, so when they say that there is good Kero and bad Kero I am sure there must be some element of truth, though not 100% of the time.

I personally know of many people who had taken the risk of carrying Kero, TEL and even Ether or mixed fuel onto an airplane, and that includes some of the ex World/European champions and even Singaporeans. I am quite sure that they do not fully comprehend the ultimate consequence of their action, which can include hefty fines and jail terms, depending on where you are caught or accident that occur.

If the objective is to have this "Standard F2C fuel" as a supplementary service (as opposed to the only authorized fuel allowed at a contest (or major contests)) so as to reduce the problem of bringing volatile/toxic fuel ingredients onto an airline, then there is a chance that more people will support such an initiative.

- 1) Why an Authorized Standard F2C fuel only approach will not work.
 - a. Most people will have their favourite snake oil and will be prejudiced against using a fuel that is being dictated.
 - b. It could well be that a particular make or batch of Kerosene really have some peculiar properties that makes the fuel more forgiving for consistent results.
 - c. Bans on additives like TEL or other new discoveries or secret ingredients are difficult, if not impossible to enforce:
 - impounding of refuelling canniser, monitoring 6-9 teams at a time since there is pre-warm up preparation and warm up

- if you have pure TEL you need only 0.16 ml/litre fuel or 1ml of it if it is cut back 1:5 with kero
- d. Some competition will want to use minimum 12% oil for longevity, others think 10% is too much. Some new very specialised synthetic oils offers clear performance advantage over castor (but not the add protection). Many people experienced the variable quality of Castrol M, especially the bottom half of the can. It is considered too acidic by others.

Even in F2D, where the fuel has been standardized to 10% by volume Nitromethan, 20% by volume castor oil and the remaining technical methanol with 99% purity (or likely the organizer may purchase a well know brand of commercial fuel with 10% nitro which is most likely by weight since the density is 30% higher than methanol), there had been talk/suspicion that some teams cheat. 3-5 ml of Nitromethane pre-loaded into a specially designed dead space of the refuelling syringe plus another 1-2 ml in the empty bladder could mean that a particular team is running 15% nitro fuel.

- 2) What is needed in a Supplementary F2C Standard Fuel
 - a. It must perform as good as the fuel used by 90-95% of the current users
 - b. The ingredients must be obtainable without too much difficulty
 - c. There must be some options for some of the ingredients
 - d. The characteristic of such a fuel when blended with the various ingredients specified is consistent/almost identical whether you do it in Europe, US, Australia, Singapore, China or South America
 - e. Some of the top teams must be prepared to be champions of such a fuel, i.e. use such a fuel exclusively

Proposed Ingredients and percentage:

A) Oil

- a. 7% Castor + 3% Maxima Racing Castor 927
- b. 10% Castor
- i. Castor can be Klotz Benol, Bakers AA or Castrol M (first 2/3 of a cannister)
- ii. Klotz Benol should be preferred oil as it has some additives added and is more stable and oxidise less upon storage (I have evaluated fuel containing only 6% Castor on the bench and Klotz works very well, easy to set and stable performance, faster than 10% oil). There are distributors in some countries.
- iii. Maxima Racing Castor 927 can be replaced with 3% Castor, but Castor 927 has additives that works in reducing carbon build up/softer deposits. It works better than Lubrizol 52 (or ADX 511?) for carbon deposit control, and it the only additive that I know which significantly reduces the iron oxide deposits on center of piston top when Ferrocene is used. There should be distributors in Europe where high performane jet skis or snowmobiles are used. There is a distributor in Singapore for 1/2 gallon bottles (Euro 20)

B) Ignition Improver

- a. 1.5% 2 Ethyl Hexyl Nitrate
- b. 1.5% DII3
- i. If we are to exclude any form of Nitrate in the

proposed Supplementary Standard F2C fuel, then we might as well forget about the idea. There are no known non-Nitrate substitutes. I believe that folks in Russia/Ukraine have been evaluating almost every compound that they can lay their hands on, and 1-2 teams currently is using some form of Nitrate with a cyclic ring (Ethyl Cyclohexyl Nitrate, Ethyl Cyclopentyl Nitrate or something similar). The F2C engines simply will not peak. We have forgotten to add Nitrate to our fuel a couple of times and the end result is a max speed close to 2.0/lap without range and great inconsistency plus difficult starts.

- ii. 2 Ethyl Hexyl Nitrate should be available from major laboratory chemical reagent suppliers, such as Merck, BHD, etc that supplies laboratory grade Diethyl Ether. Because such companies routinely import and redistribute hazardous chemical compounds, items such as Diethyl Ether and 2 Ethyl Hexyl Nitrate are easy routine stuff for them. We ordered 5 x 1 litre bottles from the Singapore office of Aldrich Chemical Company (they are US based company) which they then imported and it costs us only Euro 30 per 1 litre bottle. The bottle states 97% purity but I have not used it yet as I am still using up the DII3 that I hauled back from Jean Paul in 2000. In 2000, we started with Iso Propyl Nitrate, but it was more volatile and stronger smell, required higher % than DII3 and costs 3-4 times more than 2 Ethyl Hexyl Nitrate.
- iii. DII3 is Octyl Nitrate, whilst DII2 was Hexyl Nitrate. The reason the Ethyl Corp went to DII3 for Diesel Trucks is that DII3 being 8 carbon molecules and much higher flash point, so it can be safely stored with violating fire ordinances without a special licence/safe stroage place for their customers. 2 Ethyl Hexyl Nitrate is Octyl Nitrate. Whilst DII2 was a mixture of Hexyl Nitrate and some other nitrate, I suspect that DII3 is actually just 2 Etyl Hexyl Nitrate (and what Aldrich packed and sold is essentially the same product, that is why it is relatively inexpensive).
- iv. There is a good supply of DII3 in Europe. The Australian seems to have amply supply that someone carted back, and no problem with the Americans. I am sure than if the WC were to be held in China or Argentina, they should be able to get a chemical reagent supplier to import it.
- v. Typically the various teams are using from 1.2 - 1.8% DII3, so 1.5% is a good compromise. I have used 1.2 to 2.2% without seeing any significant difference in the air or on the bench.
- C) Ether
 - a. 34% Technical Grade ether as supplied by Laboratory Reagent supplier/Medical supplier.
- D) Cetane Enhancer
 - a. 0.8 gm/litre of Ferrocene
 - i. Cetane enhancer such as TEL or Ferrocene is now part of the landscape because of the following:
 - the combustion at peak is less harsh, hence bearing life is enhanced (especially if 8x19 and not deep groove), should also benefit rod bushes and piston pin bosses
 - engine setting more tolerant, rather than falling off the heat curve is the engine is undercompressed

- significant performance gain only if 2-2.5% of Russian TEL fluid and 6-7% oil, but it brings other problems so most team have leaned to avoid more than 0.8%. - only a small amount is required, banning it means that competitors will sneak their own into the mix. No point to ban something that is difficult to monitor.

- ii. Ferrocene should be encouraged because it is of low toxicity, unlike TEL which is more toxic than most people realize. In Singapore, it is a strictly controlled poison and the Octane Labs performing RON tests must submit a monthly inventory and daily usage, even though they only 1 litre of it. So getting caught with it in Singapore or at the airport could mean a couple of days in jail plus a heavy fine. I am sure this applies to some other countries as well, hence encouraging people to stop using it is moving in the correct direction.
- iii. Other than leaving iron oxide (iron oxide is soft) deposit on the top of the piston which can be controlled by Maxima Racing Castor 927, Ferrocene does not cause excessive wear even at concentrates of 5 gm/litre (adding more does not make the fuel hot and difficult to handle, unlike TEL).
- iv. Ferrocene should be obtainable from Laboratory Chemical Reagent suppliers. We purchased from Aldrich Chemical Suppliers who packs it in USA.
- v. Since Ferrocene is low toxicity and powder form, it is easy to pack and mail to whoever needs it. We only need a few persons to volunteer their time to help others since 50 grams lasts a long time.

E) Carbon Remover

- a. 3% Maxima Racing Castor 927 replacing Castor
- b. None, and competitors add their own, since the Supplementary Standard F2C fuel is meant to facilitate availability
- i. Personally I do not like Lubrizol 52 (ADX511?) as it did not really worked for me. The carbon is still difficult to remove, perhaps just a little softer. It could be because I was using too low a dosage since the stuff I had from Perkins was already cut-back and I might have been trying to economise further.
- ii. Roland Surugue told me that you cannot put too much Lubrizol 52 as it will affect the performance of the fuel. We had a real life experience with Infineum 9344, which is Overbased Calcium Sulphonate or the active ingredient in Lubrizol 52. 0.4-0.5% was very effective in reducing/softening carbon deposit (80-85% less), but in the fuel with 0.16% pure TEL, the fuel was dead the next day, losing airspeed dropping from 17.8/10 to 18.8/10. Infineum 9344 does not affect fuel using Ferrocene, even after the fuel is stored for 3 months. So with Ferrocene, it is perhaps possible to have cleaner engines with higher does of Lubrizol 52.
A point to note is that Infineum 9344 removed carbon but not the iron oxide deposits on the center of the piston top from Ferrocene, so a brown island appeared (as opposed to the normal black + black brown) when 0.5% 9344 was added.

F) Kerosene

This is the most difficult ingredient of all, because Kero is such a variable product. It can contain

anywhere from 14 to 40% Aromatics (18-22% is more typical after blending to meet Jet A1 specs) depending on the type of crude which the Kero is cut from. I am quite amused by the discussion in C/L racing on Jet A 1, because in most major cities in the developed countries, the Kero available is invariably Jet A1 because there is where the demand is, and there is a specific energy and ash content per unit weight specification to meet, whilst Kero for cooking and heating is mostly in the undeveloped countries, and they do not need to meet any specs for that. So invariably, the quality of Kero is higher and more consistent today than 30 years ago, unless you are somewhere remote in Indonesia or Brazil.

1. The greatest challenges for this component in Supplementary Standard F2C fuel are:
 - a. Cost, typically you can be looking at 10 - 20 higher than the cost of Kero, if you are buying only 5-10 litres, but if you have a group of 3 or more teams and a place to store 2-3 drums, cost would only be 2-3 times that of Kero and a total outlay of Euro 250-300 for 2 components x 200 litres.
 - b. Availability in small packings. Purchases typically must be in 200L drums as even small chemical solvent distributors rarely re-pack into gallon or 4 gallon cans. If the ingredients must be in a max of 5 litre packing, then we need to look at the Laboratory Reagent Suppliers to see what they can offer.
2. Ingredient/blends that have the highest likelihood of being more consistent than Kero and reasonably available (but someone needs to evaluate them subsequently) which I had evaluated before are as follows:
 - a. Kero 150-250 distillation, flash 40-45 - typically 18-22% aromatics, 15-20 Naphthenes, 2-3% Olefins, the rest Iso/normal paraffins. More lights than heavies hence low flash point - universally available but varying quality
 - b. Norpar 12 185-221 distillation, flash 66 - mainly 12 carbon normal (straight chain) hydrocarbon. Engine runs cooler, very sweet and non critical, but less speed (0.5/10) and range 3-4 laps - available in Europe (ExxonMobil, Haltermann), USA, Malaysia (we do not import to S'pore)
 - c. Exxsol D60 182-209 distillation, flash 62 - narrow cut kero which is hydrogenated to convert Aromatics to Naphthenes. About 35% Naphthenes, 35% Isoparaffins, 30% normal paraffins - works very well as a fuel ingredient by itself, a similar grade works very well for someone I know in the Scandinavians - my fuel in 1992/3 before giving up F2C was 2/3 Exxsol D60 and 1/3 Norpar 12, seems to work a fraction better than 100% Exxsol D60 when TEL is added - available in drum form in Europe (various manufacturers ExxonMobil, Shell, Total, Carless, also mfg in Finland), S'pore, Australia, PRC-Shanghai, USA

d. Isopar L(S) 190-203 distillation, flash 63
- special synthetic product manufactured in Singapore and distributed only in some Asia Pacific countries. 80% Isoparaffins, 20% Naphthenes
- I included it here only for reference to properties to understand how Naphthenes and Isoparaffins might work in the correct distillation range
- used 100% in place of Kero, requires 3/8 turn more compression, engine runs a little hotter and a little more critical in operating heat range
However, the set up I was using to evaluate was a Yugov that had a little too much cooling and tank too far in-board, creating inherent problems to begin with (i.e. starting off cold and heating up). A little faster/more range than Kero.
- My fuel for the past 3 months is 40% Isopar LS and 60% Kero, it is working very well for me so I should evaluate 100% with a properly sorted model/engine set-up. This ingredient will not make it to Standard F2C fuel due to universal availability

e. Isopar H 179-187 distillation, flash 53
- this is the ingredient that I thought would work well for F2C fuel as it is a Iso Paraffin closest to Exxsol D60
- evaluated it many times but it never gave satisfactory results, so back in 1992 I concluded that Isopaffins does not work and should be avoided as much as possible, but when I re-examine the data again this year against Isopar L(S), I think it is a combination of being too light plus Isoparaffins needs some Naphthene or Aromatics in the mix to help catalyse the combustion (like Norpar 12 and Exxsol D60). But I must have evaluated a mix of Isopar H plus Exxsol D60 and that did not work quite so well either.

f. Isopar M 223-254 distillation, flash 93
- did not work, leaves a little smoke trail, lots of smoke during pit-stops and difficult restarts. Inferior performance. Simply too heavy
- cannot remember whether I evaluated Isopar L in 1992, likely I did not as this was 1 grade that we did not maintain inventory in Singapore, even if we had samples in the lab.

g. Solvesso 150 183-207 distillation, flash 66

3. What I had hope might work:

Isododecane 176-192 distillation (179-183 5%-95%), flash point not indicated. I was hoping that this would be the magic ingredient that you're looking for since it made by BP and marketed as high purity hydrocarbon and should be repacked by Laboratory Chemical Reagent suppliers as a high purity hydrocarbon grade like electronic grade IPA, N-Pentane, Cyclo-Pentane, Cyclohexane, N-Heptane, etc.. But looking seeing that it is very close to Isopar H, it is unlikely to work well. Their next grade is HexaDodecane, a 16 carbon molecule which is like mixing Isopar L with Isopar M, and that would not work either.

4. What are the most likely options

a. n-dodecane 80% plus 20% Aromatics 100
- n-dodecane should be available from Laboratory

Reagent Suppliers, C12 normal paraffin, 216 boiling point 71 deg flash. If in a drum then buy Norpar 12
- Aromatics 150, such as Solvesso 150, should be better as it is 12 carbon, but purchasing less than 1 200L drum is likely to be difficult.
Need to check with the Reagent suppliers what do they have in the range of 12 carbon aromatics, perhaps Ethyl Di-methyl Benzene or Di-ethyl Benzene
- Alternative is Aromatics 100, which should be available in Lab Reagent Suppliers as Tri-methyl Benzene.

b. Exxsol D60 or equivalent + N-dodecane
- Exxsol D60 will have to be purchased in a drum. The Europeans could get something organized, Russians/Ukrainians?? Chances of success is lower unless the performance is slightly superior to Kero, then they will probably haul the whole drum back to Eastern Europe.

So, I hope I did not overwhelm you with the information above.

Best Regards
Chris Wee



Seen at the opening day of the Victorian State Flying Field.

Graham Keen (Left) is seen here discussing with Jim Ray the model that he has been developing that is made from corrugated plastic sheeting. Graham reckons the model, with an OS 15 up front, flies well, is simple to make and is almost indestructible. An 8 foot x 4 foot sheet of material obtained from a local sign maker at a cost of \$30 would be enough material to make plenty of cheap sports models. Jim was impressed!

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

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

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

CONTEST RESULTS

MINI GOODYEAR 9/11/03 at Frankston

	ht 1	ht 2
1. G.Wilson/M.Ellins	3:25.72	dns
2. J.Hunting/K.Hunting	4:32.34	dns
3. M.Wilson/A.Lumsden	4:40.38	4:32.78
4. H.Bailey/P.Roberts	dnf 34	5:13.76

Combined Speed 9/11/03 Frankston

Name	Class	Flight 1	Flight 2	Flight 3	Fastest	Motor
1. N. Wake	1	15.31	15.17	-	15.17	O.S.
2. N.Wake	5	14.87	14.99	15.10	14.87	Nova Rossi
3. V. Marquette Vintage Proto		44.26	44.45	43.00	43.00	Enya

Midge Speed

Name	Class	Flight 1	Flight 2	Flight 3	Fastest	Motor
1.K. Hunting	Midge	10.31	10.42	10.75	10.31	PAW
2.J. Hunting	Midge	11.04	-	-	11.04	
3.K. Warrem	Midge	11.27	-	-	11.27	PAW
4. M.Wilson	Midge	11.68	12.03	11.60	11.60	

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*This trainer model which was built by John Hallowell was recently successfully test flown at Doncaster
 “John can't help himself....reckons the new model should be good for 50 laps at 20/10”
 Note hopper tank to help maintain feed when novice gets model into free flight.*

EDITORIAL

Seasons greetings to all our readers and a special thanks go to all you folks out there that contributed articles and pictures for insertion in this newsletter over the past year. For those of you readers that **almost** sent in an article or news snippet but didn't quite make it I say make 2004 a special year and let us all hear what is happening in your Control Line Circles.

Ed.

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Ken Dowell builds and flies the new ARF NOBLER



The control ratio in this model is very high, as it was in the 50's. The model is a replica of the Nobler as it was at that time. If you are likely to be uncomfortable with high-ratio controls, then by all means change them to something more in keeping with today's standard. It just won't be a 50's Nobler. However, for anyone to assert that this kit is somehow inferior because it adheres to the original concept is simply hot air! To assert that a purchaser who leaves the control ratio as supplied is "making a mistake" is also simply hot air. Compared to today's low-ratio systems, it will be challenging to superimpose but not by any means "unsafe" - just expect it to respond very quickly.

The pre-installed control assembly has drawn criticism for being too weak. It MAY be, and especially compared with today's standard. BUT, there were thousands of models using the same system design without ever having bellcrank or lead-out failures. Will this fail? - Who knows. If you're in doubt, then replace them, but in my opinion, for what it's worth, it is adequate. If I were building from spec, I would probably make it stronger but again, that does NOT make this inferior, just not to a home-build standard.

That's all that need be said on the matter. It's an ARF kit, and as such is quite good and certainly representative of the era from whence it came. Should you be unhappy with any element of yours then change it, but please don't bitch about TopFlite ripping you off. This kit model is NOT intended to be anyone's next F2B ship - perhaps a Vintage or Classic contender in the hands of a pilot from that era who remembers Noblers for what they were rather than expecting it to conform to today's standard.

So much has been said about George Aldrich's "Nobler" that nothing more need be said here. This kit from TopFlite is new in that it is ARF - Almost Ready to Fly! I I

It is with deep regret we announce the passing of long time VCLA/CLAM/CLAMF member Ron M. Wilson on the 15th November 2003.

His funeral was held on Wednesday 19th November and was attended by many past & present modellers.

Ron had been a control line modeller since the 1950's until the 1990's and held many records in different racing classes these being Class II T/R, 1/2A T/R, F2C, OPEN RAT RACE & 2.5cc RAT RACE. During this time he was always willing to help anyone who was having trouble tuning an engine, he had a great knowledge of how engines should & could work to their best.

Ron went overseas with the Australian Control Line Team & competed at the 1976 & 1978 World Championships helping the Australian team to 2nd place in the team prize (1978).

Apart from being a great competitor Ron also held the position of treasurer of the VCLA, 26th Nationals at Geelong & had a turn at Club President of CLAM for a few years.

Thanks for your contribution to Control Line Modelling.

I regret not having taken photos of the individual components of the kit prior to assembly, but it comes complete - including a tank that would be ok with a .25 engine but certainly not large enough for a .35 or .40. Added to that, the tank is not a uniflow style, but one intended for muffler pressure. The later kits now have a radio-style plastic clunk tank of larger capacity included. Wheels are included. All that is needed is an engine, propeller, and spinner. Even the bellcrank and lead-outs are installed in the wing. Many Americans have replaced them with heavier-duty units, but if 24 thou cable lead-outs are going to be a problem in use, then don't fly it on standard 15 thou lines.



The cowl is fibreglass and pre-painted to match the colour of the MonoKote. The wing, flaps, stabiliser, elevators, fin/rudder, and fuselage are pre-covered with MonoKote. The only assembly needed is to hinge the flaps to the wing, hinge the elevators to the stabiliser, and put all the major components together. If one were to be really serious about it, it could be in the air in the afternoon if you brought it home at 9 in the morning. The lettering and badges are supplied as self-adhesive labels.

There are also three interesting words in the End Label. I was more than a little surprised.

The MONOKOTE. The standard of the covering will undoubtedly vary from kit to kit, and the instructions advise tightening it on all components prior to assembly. I do not profess to be an expert with plastic films but used them a lot many years ago when playing around with radio models.

The wing was virtually perfect and needed no work at all. It shows some scuff marks on the rib tops due to movement within the box that could have been avoided had more thought been given to preventing the components from sliding around.

However, all other components needed work. In my case

the stabiliser and one elevator had bad slackness, and due to the small areas affected, I found it impossible to shrink it nicely tight. The entire fuselage top, from canopy to bulkhead, had longitudinal creases that proved to be impossible to shrink without actual iron contact which effectively pushes the covering into the grain of the wood underneath. This spoils the appearance marginally, but is hardly noticeable from four feet away. A hot air gun does not have the same effect on covered-wood as it does on open wing panels.

The CONSTRUCTION. To me, it looks a little flimsy, but it is certainly strong while ultra light weight. The wing is perfectly straight and as true as my aging eyes can see. There are lightening holes in everything. Even the engine bearers taper in width where they extend behind the firewall bulkhead. It is only these bearers that extend forward of the firewall.



Photo above: *I trimmed the MonoKote from around the cockpit and zapped the canopy on rather than "fix" it in place with striping tape as is suggested. Visible are lightening holes, the bolts used for the temporary wing install, and the conventional flap horn with pushrod from the bellcrank, and below it the pushrod to the elevators.*

The fibreglass cowl is actually the whole nose - it fits by sliding over the motor, to a point just rear of the firewall and fuselage sides, a little like pulling a sock onto your foot. It is held in place by small screws on each side going through the fuse sides into the edge of the firewall, which to me is surprisingly weak as, without any support inside the cowl, any downward pressure on the "nose" places pressure on the upper of these small screw holes at the rear edge of the cowl. The spinner and propeller are then fitted. The cowl sits on top of the nose block behind the firewall, and outside the fuse sides. The lower portion extends back to a point beneath the wing's leading edge, just behind the undercarriage.

The lead-outs are not adjustable, probably in keeping with the spirit of the original model. A three-inch bellcrank is used, as was standard for the year. Remember, the

Nobler is well over 40 years old.

The INSTRUCTIONS. The method of assembly is explained exceptionally well in the included booklet, and includes photographs where/when appropriate. There needs to be a lot of temporary assembly when fitting the control system, and this is made much easier by having the wing locate with a dowel peg at the leading edge and two hold-down screws at the trailing edge. At first glance, these may appear to allow for a removable wing, but would certainly not be strong enough for that purpose.

SUMMARY The only change I made was to fit a larger tank (uniflow and with remote vents) to suit the Brodak .40. The intended tank fitting is permanent but making it removable isn't easy due to the confined space available. The fuselage is considerably narrower than usual, requiring some shaving of the inside edges of the bearers. Either a suitable plastic tank or a specially-made metal tank would definitely be necessary for .35's and .40's.

It assembled easily and accurately, with nothing needed to maintain alignment of components. I would however urge prospective customers to NOT watch television while making the required holes in the cowl - I managed to drill a small beginning hole for the needle valve on the wrong side of the cowl, then doubled up by cutting the slot for my remote vents on the wrong side too!

Because the Brodak engine is also ultra-light-weight, I mounted it well forward on the bearers. Heavier motors could be mounted further back and a good CG location could still be achieved without having to ballast nose or tail. With the Brodak, complete with Brodak muffler and not a lighter tongue unit, it is 39 ounces. Many, MANY years ago, I had a number of Noblers, but none were ever this light.

It must be remembered that this is a "commercial almost-ready-to-fly kit", and as such I consider it to be very very good. It doesn't come complete with a standard of finish that many might achieve if they scratch-built their own Nobler. If there is a major drawback, it is the cost to Australian customers. It sells for US\$100 (round figures) in America, but by the time it arrives here, the expected cost is close to AU\$300, and that to my mind makes it a trifle expensive for what it is.

It hasn't flown yet, due to lousy weather. This report will be updated immediately thereafter.

Wednesday 5th November Update: It flies SUPERBLY!

All that is needed is a little tweaking of the pushrod lengths to even up the inside and outside turn rates. It simply sits in both level and inverted - try to fly it level and it will wander. The Brodak 40 is still a little on the tight side so I'm not trying to fly it too slow, but overall performance can only improve as the motor settles in to a steady four stroking. I am using a lightweight 10x6 wood prop, but will change to a 10.5 or 11 x 5 when the motor is better settled. I am also using 62 feet of eye to eye 15 thou lines, which I expected to possibly be a little long, but it feels fine. As someone noted on the Stuka Forum - the lead-outs could be a little further forward. Fitting adjustable ones could well be worth the time and effort prior to assembly. Another possibility is simply to move the rear lead-out forward about 1/2 or 3/4 inch as that would be relatively easy to do with minimum recovering of the tip.



Photo above: The cowl overlaying the top and sides of the fuselage. The two small pipes are the remote tank vents.

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