

From: National Control Line Racing Association  
Bill Lee, President  
601 Van Zandt County Road 4815  
Chandler, TX 75758



**TO:**

## *Special Propeller Issue!*



## *TorqueRoll!!*

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## **President's Column - April 2004**

### **Bill Lee**

#### **F2C Rules Changes:**

I attended the FAI meetings of the CIAM in early March. At the F2 Technical Subcommittee meeting, a couple of rules changes were adopted that affect F2C.

Actually, the rules are adopted by the Plenary after the F2 Technical Subcommittee makes their report. While the Plenary (the collection of delegates from all of the member countries) are the actual voters, they are, for the most part, a rubber stamp for what is reported from the Technical Subcommittees.

**Pull Test:** A proposal from Sweden was adopted that sets the maximum weight for an F2C model at 500gms. That is a change from the previous maximum of 700gms, and reflects a more realistic upper bound. In conjunction with the change to the max weight, the pull test was increased to 40Gs.

**Semi-Scale rules:** There were several proposals to eliminate the semi-scale requirements for F2C. All of them were defeated and the rules in this area remain as they currently are written. However, in the Plenary session, there was a strong comment from the Bureau that the term "semi-scale" is NOT well-defined. I would expect this to be debated in the future, and we who fly F2C must become and remain involved in that discussion.

**Line Size:** Two proposals were offered which addressed differing aspects of line sizes. Through discussion by the attending members of the F2 Technical Subcommittee, a single proposal was created and approved (my recollection was unanimously) by the Technical Subcommittee that addressed both issues. The change was accepted by the Plenary.

Starting in 2005, line sizes for F2C must be .38mm with a -.01mm tolerance. This line size is for solid OR stranded wires. In addition, stranded wires must be the standard 1x7 stainless steel stranded wires, not coated or soldered or.... And the rules now specifically allow stainless solid wires (Note: *allow*, not *require*.)

The dimension .38mm was chosen since it represents a readily-available size for 1x7 stranded wires: the typical .015" size. And solids of that dimension, while not the "standard" that the metric world insists "must" be used, are also available. In addition, several of the usual model equipment suppliers have already begun the process of making solid wire at the proper dimension available widely.

The rationale given for the change is safety. No, not line-breakage, but to eliminate the penalty imposed on a team when it would be the prudent thing to do to use stranded wires. The rules previously required stranded wires to be .34mm versus .3mm for solids. And the -.01mm tolerance

was ONLY available for solid lines. This size discrepancy often caused a team to NOT use the stranded wires in wet conditions (where they ARE safer) due to the performance penalty. Harmonizing the line size for both solids and stranded wires was the primary goal of the proposal.

The original proposal was to make all wire size .385mm, a dimension that would have been very difficult to achieve for stranded wires. It was felt during the discussion that the readily-available .015" (i.e., .38mm) size would be preferable, and that was where the dimension came from.

Also during this discussion, it was pointed out that the soldered lines themselves are a problem since they cannot be inspected for internal damage, they cannot be examined to see if they are made of the proper material, etc. The idea that only the standard 1x7 stainless stranded lines, uncoated, be allowed was voiced and accepted by the Technical Subcommittee.

After this composite proposal was created, both of the original proposals (from Switzerland and UK) were withdrawn by their delegates.

The reaction to this rules change has been classic "chicken little"! Everything from "This will kill the event!" to "All of our top teams will quit!" to "Nobody will be able to fly the models!" to.... And, just as Chicken Little was wrong, so will be these...

Yes, these rules change the event! This is the first significant change to F2C in many, many years. But, just as with ANY set of rules, true competitors will work to them and will make their models comply and will become and remain on the top.

#### **2004 World Championships:**

As of now, there are 33 nations who have sent in preliminary entries for the World Champs. True, some of them will not actually attend, and also true, most nations will not field a complete team for all four events. Our expectation and hope is that we will have an entry somewhere in the neighborhood of 2/3rds of what has been seen in recent World Champs when held in Europe. We know that many countries will not attend due to the expense of travel, that they can and so attend when in Europe for that reason. At this writing, actual numbers of entrants is not known.

#### **NCLRA Elections:**

The period for nominating officers for NCLRA is now (through the end of April). This is the year when we will elect the President, Vice President and Secretary/Treasurer. If you have a nomination to make, please notify me, or Tim Stone, our Newsletter Editor.

In addition, there are a couple of Bylaws revisions that will be voted upon.

The nominations and a ballot, along with the proposed Bylaws changes, will be in the June *Torque Roll*.

April 30<sup>th</sup> 2004. Nominees will then be placed on a ballot that will be printed in the June 2004 'Torque Roll' and must be returned by July 1<sup>st</sup>. Results will be tabulated and election results will be announced at the Banquet meeting during the 2004 Nationals.

### **NCLRA WEBSITE**

The NCLRA Website has a new updates and a fresh look! Les Akre & Doug Haas have volunteered to help Bill Lee out with some site upgrades by posting some photos of racers & their gear. Log on to [www.nclra.org](http://www.nclra.org) to take a look. Thanks to Les & Doug.

### **NATIONALS EVENT DIRECTORS**

Bob Whitney has updated me with the status of volunteers that will be running events at the 2004 Muncie Nationals. We still need someone to step up & volunteer to run Texas Quickie Rat, F2CN, and .15 Rat (Hamster). So far here's the lineup;

Sun-Fox; Jim & Jason Allen

Mon- F2C John McCollum

F2CN-?

Tues-Goodyear; Bob Whitney

B Team Race; Tim Stone

Weds-Slow Rat; Bob Whitney

Clown; Tim Stone

Thurs-Rat ?

Texas Quickie ?

Fri-Mouse 1&2 Jim Pearson, Randy Bush

### **HAMSTER HEADLINES**

John Starkey sent me photos of his new Hamster in progress.



John is using a Nelson .15, Nelson pan & McDonald rotary shutoff mounted vertically just behind the motor. While others have been rumored, this is the first Hamster I have seen built using Henry's excellent pan. The model shows a strong resemblance to the "Dalesman" Team Racer design.

### **NCLRA VICE PRESIDENT CANDIDATE STATEMENT-JIM HOLLAND**

I would like to begin by thanking Tim for this opportunity to say why I am running for NCLRA Vice President re-election and why it would be a good idea to vote for me.

The last couple of years have seen mixed results for both the NCLRA and Control Line Racing. While we have seen rules adopted for a couple of new events (Flying Clown and F2CN) and membership holding pretty steady, I believe there are some issues to be resolved that I can help address:

Firstly, while membership is relatively healthy, attendance at contests seems to be falling. If retained as Vice-President, I will work for the NCLRA to design and implement a survey of current and former members to determine the underlying causes of the issue and help identify effective solutions.

Secondly, if this sport is to survive we need to grow it. If re-elected Vice President, I will work to see that the NCLRA starts spending some of its earnings on advertising in the modeling press and possibly producing a fold out brochure for distribution to hobby shops.

Thirdly, I will work with the President, District Reps and members of the AMA Control Line Racing Contest Board to try and return to some kind of traveling Nationals. – Many of us would like to see a change from Muncie and it is important for the NCLRA to thoroughly investigate this possibility for the future of Control Line Racing.

Finally, I will continue to do what I have always done since returning to this hobby – stand up for the interests of active racers, help out wherever I see a need and offer solutions when a change is needed.

See you at the next contest.

### **EDITORS' COLUMN**

#### **TIM STONE**

### **NOMINATIONS FOR NCLRA OFFICERS**

This year is an election year for NCLRA Officers.

According to NCLRA bylaws, elections for President, Vice-president, and Secretary/Treasurer are held on even numbered years for these 3 positions; District Rep's elections are held in odd-numbered years.

Any NCLRA member may be nominated for these positions by submitting their names to Bill Lee or Tim Stone. Send your nominations to us via email or U.S.Mail at our contact addresses on the back page of newsletter. All nominees will be printed in the June 2004 newsletter.

Nominations must be received between March 1<sup>st</sup> 2004 –



Mike MacCarthy debuted his new 'sidewinder' style Hamster in Tucson, and I have heard that Scott Newkirk and Bob Oge are busy in the lab building theirs.

According to informed sources, Les Akre is also developing a new motor for Hamster/Goodyear using as of yet unnamed parts as a basis. Les is being pretty tight-lipped about this project so far. With the current performance levels of the stock

Nelson, and specially tuned Rossi's/ NovaRossi's by Vic Garner, Tim Gillott & Bob Oge, Les has his work cut out for him!



I finally got around to tweaking my Hamster. The front end has been moulded to fit the motor, new titanium landing gear setup & new paint. It is quite a bit slicker than before, and weight reduced from 19oz to 18 oz...New LG setup proved to be too weak at the Tucson contest, the two 4-40 bolts holding the gear on snapped off during preliminary race.



Mike MacCarthy with new .15 Rat at Tucson



Australian 2002/03 Nats winning 2.5cc Rat by Alan Lumsden. Rumor has it that we may face a few of these diesel powered Hamsters at the U.S. Nationals. Aussie rules for Rat allow unlimited whipping!

**Steve Wilk** has made the best of those long Minnesota winters by producing some fine looking new Hamster props. Pictured above are a few of the 17 different props that Steve makes for .15 Rat, and Goodyear. They all look like winners to me, and I'll get a chance to try them out at Tucson on 3/27 & 28. I can't wait! The S-1 and R-8 look like good choices for a strong motor. Steve has also rearranged his prop list by event to help with selecting the right prop. Steve's newest list appears in the back pages of this issue.

## FEBRUARY ISSUE

I wanted to thank Bill Bischoff, Mike Greb, Russ Green & Bob Whitney for their help with contributions to the Feb Slow Rat special section. Their input helped a lot, and I received quite a few positive comments on that issue. I actually started getting feedback almost immediately when Members noticed that only 1 of 5 pages of that article were printed! The printer quickly corrected the problem, reprinted the entire issue &



mailed it, thanks to all for your patience. Just after the Feb issue was sent to the printer, I received photos from Steve Debord of his new Slow Rat in progress.



The front end crutch is machined from magnesium and it is a beautiful piece of work. NelsonTigre .36 power.



Steve is also making his own heavy duty bellcranks, mechanical fastfills, and leadout guides for 2 airplanes being built at this time. It looks like a winner, and I look forward to the final products!

## **LETTERS TO THE EDITOR**

(Jason Allen as been nominated for the position of NCLRA Vice-President, and writes this introduction)

**Jason Allen** writes;

“Eighteen years ago a good friend of my family, purchased a Plastic Cox control line airplane for his son. I had never seen one before, and being an airplane buff my father though it would be fun to go and watch them learn how to fly it. After many, many three-foot flights, my dad announced humorously that he could better, having flown as a kid. He did. He flew it for about four or five laps, before plating it in the ground.

Fascinated I wanted to try. But unfortunately it was damaged beyond repair. A week later, my dad came home with a Sterling profile kit and asked if I would like to build it for our friends. With his help we had a replacement for their broken plane. Shortly thereafter, with a little urging from me, he bought me a Sterling kit and a .049 engine.

A few years, a couple of airplanes later and with the knowledge that no matter how hard you try it is nearly impossible to start an .049 with a dead battery, I was a fairly decent pilot. We were then introduced to someone who used to race locally.

By copying a loaned mouse racer and some introductions to other racers, we were hooked. We've been racing ever since.

Racing has given me a lot over the years, Knowledge, entertainment, friendship. I think it's time to give something back. I thought an effective way to help out, would be to run for Vice President. I feel that I'd make a good VP; I get along with everybody, I'm a good listener, I have some good ideas of my own, but I never try to force anyone else to see things my way. Instead I think that the best way to convince someone is through debate and conversation.

I've been around racing for some time, and although it has been mostly regional, within the last few years we've begun to travel to larger contests. I have a good grasp of the current state of racing and the people involved. I have flown every type of racing category, recently working on a F2C Program, so I feel that I can see all the events from the people that participate, whether they are beginners, or veteran pilots and pitmen.

I hope to see you all at the NATs.

**Chris Peter** writes;

I'm overtired and can't sleep. After spending two and a half days with some excellent racers, my mind is moving a million miles an hour! (EDITOR'S NOTE Chris sent me this note Sunday 3/28 after the Tucson contest)

I thought I'd share something I do to make life simpler, and I'm sorry I didn't show it to you at the field.

The fact that the silicone fuel lines must bend 90 degrees to meet the needle valve bothers me. I like straight lines. I buy my faux Supertigre NVA through Eric Rule (RSM Distribution) and modify them this way. This can be done in a drill press, but I happen to have access to a lathe.

I chuck up the NV and take off the barb where the tubing would attach and solder on a 1/8" piece of copper tubing that has been pre-bent to 90 degrees. A tight bend is difficult to achieve even if the copper is annealed, but I was given a Dubro 1/8" tubing bender that does a dandy job. I'd never seen this tool before and I always used the K&S spring tubing benders. The Dubro is far superior. It is a tip you can pass on to your readers.



Steve Eichenberger fires up Chris Peter's new B TR

**South Central Report**

**Russ Green**

The 2004 racing season has arrived! Bill Lee, John McCollum and I made the long trip to the Southwest district to attend the Cabin Fever in Tucson. I really enjoy this contest because of the contest culture that has developed. It occurs during the transition from the building season to the flying season and people like to talk about ideas and their new equipment. Of course, there is also some great racing and I think everyone who attended had a great time. I would like to give thanks to all the people in the Southwest district who made the 2004 Cabin Fever possible.

There are a lot of good racing contests coming up this year in the South Central district. Check out the contest calendar and come on down if you can. Don't forget to take a look at our local racing rules on the South Central page of the NCLRA web site (<http://www.nclra.org/SouthCentral/index.html>) if you think you might want to enter a local event. Hope to see you there. Russ

## **NORTHWEST REPORT-MIKE HAZEL**

Greetings, All! Not too much to report on right now, so let me just plug an upcoming contest.....

The 33<sup>rd</sup> annual Northwest CL Regionals takes place on May 28-29-30, 2004. Location is in Albany, Oregon at the municipal airport.

A fairly full slate of racing action is offered, and it is spread out over the three days. There was a minor error made on the flyer sent regarding the racing schedule, so here's the lineup once again: (events in order as listed)

Friday Noon start: Northwest Goodyear, Mouse Race Class II (use contest supplied 10% fuel), Flying Clown Race.

Saturday 9AM start: Mouse Race I, Northwest Super Sport Race, .15 Rat Race.

Sunday 9 AM start: AMA Goodyear, Northwest Sport Race, Quickie Rat.

This year you can send in your entry in advance, which will expedite your time at the registration table, plus you get a discount. You can still enter on the field, but the advance entry will also guarantee that you will have an official NW Regionals T-shirt waiting for you at registration. Please contact me right away for an advance registration packet. Hope to see you at the there!

## **NORTH CENTRAL REPORT** **STEVE WILK**

Well since this is my first column, I thought I would start out by giving you a little background about myself. Yes, I make props but I will get to that in a moment. I saw my first model airplane when I was about 10 years old. My dad Tom decided to build another model, since he had been out of the hobby for a number of years. I think it was a Midwest Skyraider. We were living in New Jersey at the time and we all became members of the local club, the UMACer's (Union Model Airplane Club). After some time, dad let us build our first model airplanes. My brother Jeff and I each picked out a Sterling 1/2A kit – mine was a 1/2A Ringmaster Bipe. I do

not remember my first flight or how long it lasted before I destroyed it, but I was hooked. My Brother Jeff did fly for a number of years as a kid, but eventually lost interest. I won a few trophies as a Junior which kept my interest going. We were basically sport fliers at that time. But our club was filled with many great modelers to look up to like Dan Domina and Bill Staback, both great combat fliers on the east coast, and Henry Orzak, who never built from a kit but always scratch built his own design. Larry Scarinzi a legend in the modeling community and still a good friend to this day. Larry was a prolific modeler and designer – look in any of the Magazines from the 50's & 60's and you will see his latest design

In the Mid 70's we moved back to Duluth, MN where Dad and I continued our modeling. We became involved in the local R/C club and I had gotten a job at Carr's Hobby shop. I was even the President of the R/C club when I was in college. There were no real active C/L fliers in Duluth but there was a group in the Twin Cities and Fargo, ND. Therefore, I made the trip to attend their contests, flying a variety of events with combat being my main interest. After college I moved to the Twin cities with my future wife Becky. For the next 15 years, I became a hard-core combat flier, attending one contest after another all summer long with my flying buddy Dave Fischer. It all paid off in 1992. I took 1<sup>st</sup> place at the Duke Fox Memorial, a money contest in Chicago. We flew triple elimination Fast Combat and I was beating out the newest combat engine of the day, the Nelson. I was using a Fox Mark VI with my own aircraft design. I flew 21 matches and only changed planes once. Later that Summer I attended the Nationals in Chicopee MA, where my hot streak continued – I took 1<sup>st</sup> in Fast Combat and 2<sup>nd</sup> in 1/2A Combat. When the summer was over, my MACA rank was #2 in the nation. I was proud to think that I was now able to measure myself up to those fliers from my younger years.

Later that fall was capped off with the best news of all. My wife Becky and I were expecting a new pilot. Having reached the top and with a little one on the way, I slowed down and didn't attend as many contests. When it was time to get back into the circle, my interest turned to Racing. I had met Larry 'the Wizard' Dziak at previous contest and decided to take on a new challenge. It was slow at first but Dave and I were a still having a great time. We attended our first Racing Nationals in 1997. We took 2<sup>nd</sup> in Mouse, 3<sup>rd</sup> in Slow Rat and 4<sup>th</sup> in Fast Rat, not a bad start. Our equipment was OK but we had a hard time getting the props we needed. This is when I started to mold some props for myself. When the word got around, I molded a few extras and started selling them on the side. Now I offer over 100 different props for a variety of events, along with landing gears and other related items. Dave and I flew together for a couple more years, then he became a Dad and he stopped competing. Needing someone to drive to the Nats with, I gave my Dad a call and we have been attending the Nats together ever since. Since my Dad introduced me to the hobby, it seems quite fitting that we now enjoy the hobby together. My daughter Ashley has also picked up the handle – she is the third generation in our family to enjoy flying control-line models as a hobby. Her first contest was in Portugal, where she took first place in Jr. Speed flying a mouse racer, and she attended the last two Nats with us. I have to thank my Dad for getting me start in the

hobby and helping me along the way. He is the one that I still look towards for help and advice, and to me, is the greatest modeler of all.

Now for something completely different.

### **Mouse I**

About a month ago, I was talking with Tim Stone about Mouse I. Then he posted a poll about Mouse I on the Delphi Forum. Since then, we have read several comments about Mouse I. Here is what see going on in Mouse. I have always seen Mouse I as a beginner's event. However, the converted engines and experienced fliers have scared away some new and less experienced fliers. I've seen this happen in other events as well, such as slow combat. The limits were pushed and we had models flying over 100 mph in Slow? Combat. This event has been replaced by 75 mph Combat, which is now the most popular combat event. The field is more competitive for everyone by keeping all planes at the same speed. This is also an easy event for the beginner to compete in. Carrier has done something similar in Profile Carrier by creating Sportsman Carrier. This event has more restrictions on the engine and the aircraft, making it easier for the beginner. Fliers are also limited to entering either one event or the other. PAMPA Stunt also has skill classifications: beginner, intermediate, advanced and expert, where fliers are classified by their ability, not their age. With all of these examples, I think we can do something similar for Mouse I.

My suggestion is to break Mouse I into Beginner and Expert classes. This way, we can separate the experienced fliers and the converted engines. For Beginner Mouse I would use the current rules and make it engine specific, Cox 049 Reed Valve. I would allow engine modification so some of the beginners can experiment with their engines. I would also give the Contest Director the ability to place the experienced fliers in the expert class and keep the beginners together. For Expert Mouse I anything goes.

One thing I would also like to see is assigning an expert flier (mentor) to a Beginner and his team. The mentor would not compete with the beginner but help them out by looking over the plane to see that it is airworthy, checking the construction, balance and engine, making suggestions and recommending some changes that will make it easier to fly. The mentor would also share advice with the team on starting, pitting, giving the beginner pointers on take off and landing, and most importantly, flying - getting in and out of the pilot's circle, how to pass, the basic rules of racing,. Yes this would take some time, but think what we would gain by sharing our knowledge and help with a beginner – time well spent.

### **SOUTHEAST REPORT-BOB WHITNEY**

Everyone's getting ready for the District Invitationals to be held on April 24&25.

The boys on the West Coast have been working hard on F2C and F2CN ,We will see if it pays off.

Tom Fluker is coming in to get some stick time I hear.

We need to find another flying field to take some of the load off the Jacksonville group, we don't want them to get burnt out, still need Event Directors for 15 Rat and Texas Quickie Rat. Everything else is looking good for the Nats.

Has any one had any problems with any of the store bought uniflow stunt tanks not working? Dave and I have had two that wouldn't run right. We pulled the back off one of them and couldn't see any thing wrong, but neither one would run for more than five or 6 laps. Any Ideas?

### **SELECTING & FINISHING PROPELLERS** **TIM STONE**

In February, Fred Quedenfeld gave me the idea to cover the issue of how to finish Carbon-fibre props, or any other props, for that matter. Expanding on this idea, I thought that a few more issues might be covered while we're at it.

### **PROPELLER SELECTION**

Finding the fastest prop for any particular airplane always comes down to in-flight testing. Only the stopwatch will tell what is fastest on your plane, not the tachometer, and not how it sounds! A prop that works best for someone else's plane might not be the quickest on yours either! Racers tend to go through quite a few props if they are really serious about achieving top airspeeds. At the 2003 Nats, Dick Lambert had a bag of probably over 100 F2C props for sale, all beautifully finished, and all tested in-flight to be just a little too slow for his liking! This kind of dedication of time & money has put him at the top of the game.

Last year I spent quite a bit of time on clocking different props for Texas Quickie & NCLRA Fox. All the props that I tried looked like they had good potential. For Texas Quickie Rat, props ranged from worst of 17.8 seconds for 7 laps to best of 16.4 seconds. Same plane, same motor, same day. For Fox, the difference was even larger; slowest was 23 seconds, and the quickest was 19.8 seconds! There are a LOT of 9-6 and 9-7 props that are just plain awful on a Fox .35. With a Fox .35, vibration is a problem to begin with, and some props seem to amplify vibration, even though balanced & properly pitched. In order to 'tweak' your setup, you might need to go through quite a few props!

Some events like NCLRA Fox limit the propeller to 'stock' only, with balancing being the only modification allowed. For most other racing classes, significant gains in airspeed can be made by finding and tweaking the right prop.

If you happen to have deep pockets and a lot of time on your hands, you can determine each prop's optimum diameter through in-flight testing the prop & cutting it down as you go. For instance, you would take a TQ prop of 8" diameter, time it in the air for 7 laps; cut it down to 7 15/16", balance it, fly & time it, cut it down to 7 7/8", etc until airspeed decreased a measurable amount. This has to be done on the field & within a short period of time to minimize the effects of weather conditions on airspeed. When you're done, you will have destroyed the propeller, but will have the data on what is that particular prop's optimum diameter for that airplane.



## APC/ GFRP PROPS (Glass fibre reinforced plastic)

Fred also asked me about the use of APC props for racing; the stopwatch will answer this question, not me! Stock APC props can be competitive in several classes of racing; such as Fox, Clown, Texas Quickie Rat, 'B' Team Racing.

One advantage of any diecast prop is that you don't have to do much to prepare them, and they are extremely consistent from one to another. There are several GFRP props currently manufactured that perform quite well in racing; the choice is yours. I would caution anyone using APC props or any other plastic, nylon, or GFRP prop to check the manufacturers' specs for maximum allowable RPM's, and not exceed that RPM limit. According to APC's website, they recommend that their props do not exceed RPM based on the formula;  $190,000 \text{ divided by the propeller diameter}$ , for example  $190,000 \text{ divided by } 7.8 \text{ inches} = 24,358 \text{ RPM Maximum}$ . Or for a 7" prop;  $190,000 \text{ divided by } 7 = 27,142 \text{ RPM}$ . Master Airscrew Propellers recommends a maximum RPM limitation for their product based on the number 160,000; For a 7" diameter prop that would be 22,857 RPM, and for a 9" prop, 17,777 RPM.

As a footnote, 2003 was the first year that an APC prop (7.4 x 8) was allowed in the RC Pylon Q-40 event, running Nelson .40's at around 30,000 rpm. The difference between first & 2<sup>nd</sup> place at this year's Nats was less than a second between a custom wood prop (1<sup>st</sup>) & a stock APC (2<sup>nd</sup>). The choice of commercially manufactured GFRP props available can be somewhat limited for our use; there is a much greater choice of props made in CF, or fiberglass suitable for racing.

## GLASS FIBRE OR CARBON FIBRE?

What composite props are best? You'll get different answers for this question. Current racing props are most commonly molded with carbon-fibre, due to its incredible tensile strength. CF comes as "Tow" (fine threads) or as a woven mesh. Some props are completely made out of tow, and some use tow in combination with woven CF at the tips for splintering resistance; I find this type to be the most durable.

There are still those that advocate Glass-fibre over CF. One school of thought is the stiffer the prop is, the better, others will tell you that a little more flexible (in pitch, that is) prop is desirable. Glass-fibre props tend to be more flexible than CF props of the same thickness. My own experience is that I try to make any prop as thin as possible without fluttering.

## ONE BLADE OR TWO?



Mejzlik F2A prop for Irvine motor

I posted this question to Speed flyers on the online Delphi Speed forum, at the following web address;  
<http://forums.delphiforums.com/flyfast/start>

I wanted to solicit the opinions of people that had put some time into the issue. Single bladed props are pretty much the norm in some classes, especially FAI speed; why not racing? The current AMA Goodyear heat record was set by Bob Oge & Stoo Willoughby using a 1 bladed prop; Bob & Stoo have also had a great deal of success in F2C with 1 bladers.

The response I received from Canadian Paul Gibeault pretty much sums up what the Speed flyers had to say;

"Hi Tim,

Single blade props are favored on speed models because they GO FASTER without question! WHY exactly, is open for debate among experts. My professional prop man says a 1 blade prop gives less cowl drag than a 2 blade prop...OK. Others offer that one blade does not travel in the back wash of the other blade....

Single blade props are always greater in diameter than the equivalent load 2 blade prop. A larger disc for a given blade may be more efficient (faster) for our application. Single blade applications for engines greater than 2.5cc are rarer.

It is structurally difficult (but not impossible) to easily fabricate single blades for .40-.65 & larger disp. engines. Full size tests were ended many years ago, as the dynamic balance problems were just too difficult to overcome...

It is un-wise to just assume single blade props accelerate slowly without stating comparable prop diameters, pitch angle & blade area.

A top Italian team in their Aeromodeller article "Red October" specifically found their single blade props to give equivalent top speed BUT definitely better acceleration & hence a lower heat time.

Availability is not an issue if you mold your own props as many racers already do. If you like a certain blade, excellent molders such as S. Wilk & T. Mejzlik & others can do it for you at a greater cost. I haven't looked to see if any are currently offered though...

One thing you may have overlooked, is single blade props are less reliable than 2 blade. If your pilot nicks the blades on take-off, a 2 blade prop will usually survive. A single blade however, won't...

To sum up: Single blade props certainly have shown much POTENTIAL.... However, very few modellers have had the want to actually prove out a proper test program.

Best of luck,  
Paul Gibeault"

Faster...how much faster? Based on the limited amount of information I could gather on the subject, I have heard that single blade props may be at best 2%-3% more efficient than a 2 blade prop. In real numbers that means about 5 seconds less for a 70 lap Texas Quickie heat race, and around 4 seconds for a Goodyear. This is a large enough gain to merit serious consideration for some racers. Currently there are only single bladed props available for 1/2A (from Steve Wilk) and 'A' from Jim Booker <http://www.cedarcomm.com/~fly>, also from Mejzlik <http://www.mejzlikmodellbau.com/> and Bolly <http://www.bolly.com.au/models/glasstwo.html>



While pitch on a Speed prop might be too high for racing, you can simply change it by adding a shim under the blade hub.

I agree with Paul, especially on the issue of reliability. Last year during a practice flight, Bob Oge had the propeller counterweight come loose on his Goodyear, and the resulting vibration instantly tore off BOTH halves of his stab... resulting in an instant crash. Single blade props have to be balanced very carefully, much more so than 2 bladers.

## FINISHING MOULDED PROPS

So how do you begin finishing a CF prop? **Carefully!!** CF props in their rough state as they come out of the mold can have extremely sharp 'flashing' at the edges. If you get a deep CF splinter it can be a memorable experience! The dust produced in sanding a 'glass or CF prop isn't the most healthy stuff to be breathing either. You should avoid breathing it as much as you can; and read up on the MSDS (material safety data sheets) concerning graphite/fiberglass/polyester resin dust exposure. Some people are extremely sensitive to this dust.

Here are the steps;

- 1) Deflash
- 2) True up the hub
- 3) Trim tips & equalize blade length
- 4) Measure pitch & check for runout
- 5) Sand to shape
- 6) Balance prop

Bill Lee has written an excellent article on prop finishing, which I am reprinting after my comments, so I'll only go into details that I feel need to be emphasized.

## THE BASICS...

The goal in preparing propellers for racing is to minimize any flaws that *rob the engine of power*. For a prop to perform at its' best it must;

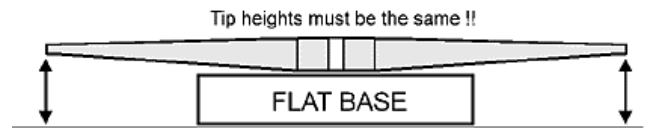
- 1) Be balanced
- 2) Be symmetrical in pitch
- 3) Be symmetrical in airfoil
- 4) Be symmetrical in blade shape & length
- 5) Track evenly

Because of the amount of time involved in finishing a prop, I have learned to perform some initial steps that keep me from putting time in to a flawed prop. First, deflash the prop, true up the hub, and trim the tips. At this point you can check for runout & pitch symmetry between blades. If a prop has excessive runout (more than 1/16") or any significant difference in pitch between blades, you'll be best off trying to correct these flaws before proceeding.

## TRUING UP THE HUB

The hole for the propeller stud should be drilled or preferably reamed out to a slightly larger diameter than the stud itself to help correct blade tracking error. A little extra clearance in the prop shaft hole makes the prop hub rear seat more accurately on the prop drive washer. Reaming as opposed to drilling is preferred because it reduces the chance of enlarging the hole off center.

Using a hand file, carefully file the front & rear of hub to be flat. At this point you can check the tracking of blades a couple of different ways.



You can measure tracking as shown in the diagram above. Another method is to bolt the prop on to an engine mounted in a plane; then tape a ruler running from the wing to the very tip of the prop, then rotate the prop & check position of the opposing blade to the ruler. I like to have props track within about 1/32" total difference between blades. If you have excessive runout, you can try to correct it by filing the rear of hub, or making a facing cut on a lathe.

## TRIM TO LENGTH

CF propeller tips are easily split, so I use a very fine toothed 'Zona' type hand saw to rough trim the blades to equal length. I then chuck a drill bit shank (size matching prop stud hole) in a bench vise vertically, and rotate the prop tips against a stationary sanding block held firm against the bench. I use 80 grit sandpaper at this stage, and light passes until both blades are equal in length.

## PITCH IT...

If you don't already have a pitch gauge, get one! More importantly than just knowing a propellers' pitch is the measure of consistency between the two blades.

Prather Products makes a very nice pitch gauge. I have been in contact with Terry & they are going to make a new batch available this Spring. Stock # for this is #7050, and it will be priced between \$59.00 to \$69.00, yet to be determined. Try to order through your local hobby shop first, if they will not order one for you then call Prather directly at 310-835-4764.



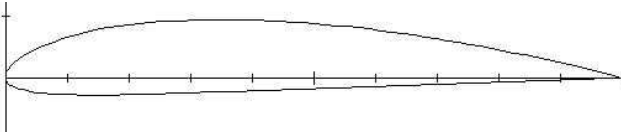
You can also construct a pitch gauge. Several years ago John Kilsdonk penned an article on this along with full sized drawing of a pitch template. The article is in Aug.1975 MA. You can order a reprint from the publisher, or get a copy of it from Tom Wilk on CD. Tom's contact info is; email [tawilk36@cpinternet.com](mailto:tawilk36@cpinternet.com) or phone him at 218-724-0928.

If pitch is different between blades it will have to be corrected. Many times this can be done by filing or milling the rear of the hub. I do not advocate trying to change the pitch by working on the individual prop blades for two reasons. First is that in order to change the pitch, you would have to work the back side of the blade, which shouldn't be touched other than cleanup. Second reason is that the chances of ending up with 2 consistent blades (in airfoil section & blade outline) are pretty slim. Generally speaking, if I can't get pitch equalized with some minor work on the rear of the hub, I give up on it.

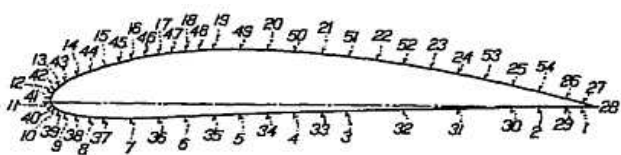
With the prop marked for pitch stations, I also use a micrometer to check blade thickness at each station.

## BLADE AIRFOIL

After doing a bit of web research on propeller airfoils I find that the most widely recommended propeller airfoil is roughly either the 'Clark Y', or NACA 4412.



CLARK 'Y' AIRFOIL



NACA 4412 AIRFOIL

Notice that the bottom is relatively flat, with just a touch of undercamber. The trailing edge should be sharp, but in practice you should make it smooth enough to avoid cutting through the pitman's glove. I have found that most commercially manufactured props have a pretty decent airfoil section, and I normally just do a clean-up on the leading & trailing edges of the blades.

## TIP SHAPE

Propeller tips should be anything but square. Bolly recommends a 25 to 35 degree rake at the tips. In addition, tips should be tapered in thickness with a smooth transition to the airfoiled cross section.

\*\*\*\*\*  
\*

## CF PROP FINISHING BY BILL LEE

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 they 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 allows 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 too 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. Re-check 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.

## **CONTEST REPORTS**

### **Ed Southwick Memorial Stunt Contest V** **February 14 – 15, 2004 Avondale,AZ.**

#### **Fox Race** (10 mins)

1. Jeff Hanauer/Bud Bodzioch 135
2. Mark Smith/Ken Gulliford 132
3. Lou Wolgast/Robin Sizemore 123
4. Larry Gulliford/Ken Gulliford 116
5. Ed Piggott/Mark Smith 32
6. Leroy Black/Nick Lemak DNF

### **TAMPA ,FLA 3/7 CLUB RACE RESULTS** **BY DAVE HALLAS**

#### **Clown Racing**

- 1st Rick Osborn /Bob Whitney 7.5 = 131,  
2nd Dave Hallas/ Eric Viglione (pilot) = 103,  
3rd Bob Whitney/Rick O. = heat race 123

#### **Fox Racing**

- 1st Phil Bayly/ Bob Whitney (Pit) 7:31,  
2nd Dave Hallas/ Rick Osborn (pilot) 7:50  
3rd Bob Whitney/Dave Hallas 9:00

#### **WWII racing**

- 1st Bob Whitney/ Dave Hallas (pit) 7:55  
2nd Dave Hallas/Bob Whitney 9:21  
3rd Phil Bayly/Rick Osborn 10:28

Not good looking times, maybe everyone will think we are slipping!

### **CONTEST RESULTS-S.W. REGIONALS** **JAN 24-25, TUCSON AZ** (Submitted by Robin Sizemore)

#### **FORMULA UNLIMITED**

- |              |                 |          |
|--------------|-----------------|----------|
| Chris Peter  | 1 <sup>st</sup> | 6:55.89  |
| Mark Smith   | 2 <sup>nd</sup> | 117 Laps |
| Jeff Hanauer |                 | DNF      |

#### **TEXAS QUICKIE RAT**

- |             |                 |         |
|-------------|-----------------|---------|
| Steve Mills | 1 <sup>ST</sup> | 7:05.21 |
| Chris Peter | 2 <sup>nd</sup> | 7:18.10 |

#### **FOX RACE**

- |               |                 |                          |
|---------------|-----------------|--------------------------|
| Mark Smith    | 1 <sup>st</sup> | 7:00.86                  |
| Larry Foster  | 2 <sup>nd</sup> | 9:07.06                  |
| Ken Gulliford | 3 <sup>rd</sup> | 9:46.40                  |
| Ed Piggott    | 4 <sup>th</sup> | 4:35.40 (Best Heat Time) |
| Lou Wolgast   | 5 <sup>th</sup> | 6:12.72 (Best Heat Time) |

#### **CLOWN RACE**

- |            |                 |         |
|------------|-----------------|---------|
| Nick Lemak | 1 <sup>st</sup> | 74 Laps |
| Mark Smith | 2 <sup>nd</sup> | 22 Laps |

## **REFLECTIONS ON TUCSON**

### **By Jim Holland**



Well, the 2004 Cabin Fever Classic has just ended and I felt that it was well worth the trip. In addition to outstanding weather, we saw some excellent racing and also got to enjoy a good social event. The weather cooperated for most of the weekend, with strong winds on Friday afternoon being replaced with moderate breezes on Saturday and near calm conditions for most of Sunday. The temperatures were in the pleasant 80's and everyone who wanted to get a new suntan collected one.

A notable feature of this contest was the fierce competition seen in a number of the events. Mouse I saw the existing national heat record being beaten, a sub 6 minute time led the qualifying for Fox Race, the (unofficial) heat record was broken for Flying Clown and both the heat and final records were pretty easily beaten in Quickie Rat. – All this took place at an altitude of 2,500 feet above sea level!

My personal highlight was the Mouse I final. My Cyclon was passing John McCollum's plane pretty regularly and he congratulated me on the excellent airspeed. I replied that I felt it was kind of ironic that this was happening as he had built its fueling and vent system. John's reply was that he was happy to have built it for the right person! He later commented that while my entry outran his Cox, he really didn't mind because

he now had a reason to work on upgrading his equipment. John certainly gets my great guy and best sportsman award for the weekend!



What other highlights can I mention? Chris Peter's excellent spaghetti dinner on Friday evening (Thanks Chris), seeing Bob Oge and Tim Stone outside of Muncie, seeing 'Uncle' Mike McCarthy's beautiful Sorceress biplane racing in the Formula Unlimited class and flying in a Quickie Rat final that some people said was the best race of the weekend.

Make plans for next year!

Jim Holland

## Cabin Fever 2004 Results

### AMA Mouse I - 11 Entries

	Ht. 1	Ht. 2	Final	Position
T. Stone	3:16.17	3:21.16		
M. Smith	2:57.61	3:20.95	7:39.00	3
J McCollum	3:03.95	2:19.96	5:02.19	2
R. Christ	3:03.90	3:12.30		
B. Brokaus	DNF	DNF		
D. Mayer	3:17.11	DNF		
J Holland	2:47.57	2:13.67	4:45.55	1
J. Holliday	DNF	DNF		
R. Oge	4:40.88	5:02.24		
W. Lee	2:31.57	2:27.63		
W.Cave	2:46.46	2:51.5		

### NCLRA Fox Race - 9 Entries

	Ht. 1	Ht. 2	Final	Position
R. Christ	6:26.03	6:03.09	7:07.91	2
M. McCarthy	6:06.58	6:19.43		
J. Holland	DNF	6:43.66		
D. Mayer	6:09.99	DNF		
T. Stone	6:05.99	DNF	5:52.39	1
M. Smith	6:17.8	6:21.17		
D. Burke	6:36.23	7:43.55		
W. Oge	DNF	6:30.83		

J. McCollum 5:57.89 DNF 8:10.62 3

### NCLRA .15 Rat - 5 Entries

	Ht. 1	Ht. 2	Final	Position
M. McCarthy	9:58.73		3:00.27	1
T. Stone	DNF			
D. Mayer	2:51.92			3
S. Eichenberger	10:03.00			DNF 2

### NCLRA Clown Race - 6 Entries

	Ht. 1	Ht. 2	Final	Position
R. Christ	133		255	2
D. Mayer	124			
W. Cave	156		283	1
M. Smith	DNF			
J. Holland	3			
D. Burke	128		DNF	3

### NCLRA B T/R - 5 Entries

	Ht. 1	Ht. 2	Final	Position
R. Christ	8:05.52		8:05.52	2
R. Duly	DNF			
J. Holland	SCRATCH			
D. Burke			6:40.29	1
C. Peter	DNF			

### SCAR Sport GY - 5 Entries

	Ht. 1	Ht. 2	Final	Position
J Holland	4:10.48		8:51.81	1
C. Peter	DNF			
W. Cave	4:50.82	SCRATCH		
D. Burke	5:25.89		10:28.73	3
R. Christ	5:43.75		10:25.38	2

### SCAR Formula Unlimited - 4 Entries

	Ht. 1	Ht. 2	Final	Position
M. McCarthy	DQ			
J. Holland	4:14.17		4:14.17	2
C. Peter	5:08.81		5:08.81	3
W. Cave	3:49.01		3:49.01	1

### NCLRA Quickie Rat - 12 Entries

	Ht. 1	Ht. 2	Final	Position
B. Brokau	3:36.55	3:44.28		
T. Stone	3:20.67	3:14.34		
J. Holliday	3:44.27	3:43.50		
W. Cave	3:04.06	2:56.41	6:10.08	1
R. Green	3:16.07	3:02.24	6:13.67	2
M. McCarthy	3:13.97	DNF	8:19.64	3



R. Oge	3:14.63	3:38.28	
J. McCollum	DNF		
C. Peter	DNF	DNF	
W. Lee	3:32.81	3:11.03	SCRATCH
D. Mayer	DNF	DNF	
J. Holland	2:59.74	3:03.07	SCRATCH

Events: AMA Mouse I, NCLRA Fox Race, SCAR Goodyear, NCLRA Quickie Rat CD Jim Holland, Phone 209-726-0357  
Email [jgmholland1959@yahoo.com](mailto:jgmholland1959@yahoo.com)

## **MIDWEST SPEED & RACING CHAMPIONSHIP**

### **MAY 15 & 16, ST LOUIS, MO, BUDER PARK**

Sat Mouse 1. Sun TQR, NCLRA Fox, AMA Goodyear  
Cd John Moll 314-830-2167, Email [JL172@sbcglobal.net](mailto:JL172@sbcglobal.net)

### **MAY 28,29,30,2004 ALBANY, OREGON – 33<sup>rd</sup> NORTHWEST CONTROL LINE REGIONALS**

Fri- NW Goodyear, Clown. Sat-Mouse 1&2, NW Super Sport race, .15 Rat. Sun-AMA Goodyear, NW Sport race, Texas Quickie Rat. Contest also includes Stunt, Combat, Carrier, Speed, Scale, and a swap meet. CD: Craig Bartlett, 205 NE Cedar Lane, Corvallis, OR 97330, 541-745-5507 E-mail: [sraigbart@yahoo.com](mailto:sraigbart@yahoo.com)

### **MAY 29-30--Houston, TX (AA) Texas State Championships. Site: Scobee Field, Houston, Tx.**

CD: Richard Stubblefield, 1922 Thousand Pines, Kingwood, TX 77339

Events: 309, 322-326, 328, 330, 331, Texas Quickie Rat, Foxberg, Sp Combat (JSO) Day Phone: 713-223-1496 Eve Phone: 281-358-3522 Contact for Stunt and Racing: Frank Williams 281-488-1371, Speed: Gene Hempel 512-282-8422 Sponsor: PropTwisters of Houston #3022.

### **MAY 29-30-TOPEKA, KANSAS 25<sup>TH</sup> ANNUAL TOPCLASSICAL Site: Gage Park, Topeka KS**

Racing, Carrier, Stunt. Sat. events Mouse 1, Class 2 Goodyear, AMA Goodyear, Big Goodyear, Texas Quickie Rat. CD James Lee, 785-266-7714 Picnic 6 PM Sat for all!

### **SCAR Race #4: Pre-Nats Warmup June 20, Whittier Narrows, CA**

(Note – This date needs to be checked to avoid a possible conflict with the Bob Palmer Stunt contest)  
Events: AMA Mouse II, AMA Scale Race, NCLRA Classic B Team Race, NCLRA Quickie Rat, NCLRA Flying Clown CD Jim Holland, Phone 209-726-0357  
Email [jgmholland1959@yahoo.com](mailto:jgmholland1959@yahoo.com)

### **DALLAS AERO SUMMER HEAT June 19-20**

JUN 19-20--Dallas, TX (AAA) Dallas Aero Summer Heat. Site: Hobby Park, Dallas, TX (Garland Rd and Northwest Highway). Events: 313, 319, 320, 324-326 (JSO) 323 (JS)(O); 321-Profile Carrier: Sportsman/Expert; Goldberg Race, Sport Goodyear, Quickie Rat, Old Time Stunt, Classic Stunt, .15 Profile Carrier, Balloon Bust (JSO) Profile Carrier (event 321) flown Sportsman/Expert. CD: Philip Nickles, 6640 Champion, Midlothian, TX 76065 Day Phone: 972-223-2311 Eve Phone: 972-223-2311 E-Mail: [phillipnickles@sbcglobal.net](mailto:phillipnickles@sbcglobal.net) Sponsor: Dallas Model Aircraft Association #1902.

## **FOR SALE**

Ready to race; 4 AMA Slow Rats with lines & motors. 2 RR Nelson .36's, 2 FR Nelson .36's (one is brand new) and props. Also 2 extra O.S. Drum rotors. All planes, motors & lines are switchable. All planes built by Mike MacCarthy, and have taken 2<sup>nd</sup> & 3<sup>rd</sup> at the Nationals. With a good Pilot & Pit crew these should be in the winner's circle!

Total est. price \$2800.00, Asking \$1400.00 for all 4 with UPS Shipping included.

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For more info call Mike MacCarthy after 5 PM West Coast time 707-542-2492

## **2004 Contest Calendar**

**NOTE!!** Confirm dates, locations & events with the CD or contact listed below. NCLRA cannot be held responsible for changes, errors, omissions, etc.

### **SCAR Race #2: April 18 Whittier Narrows, CA**

Events: AMA Mouse II, NCLRA Flying Clown, SCAR Formula Unlimited, NCLRA Quickie Rat CD Jim Holland, Phone 209-726-0357 Email [jgmholland1959@yahoo.com](mailto:jgmholland1959@yahoo.com)

### **DALLAS, TEXAS April 17-18 2004**

#### **CL Speed/Racing Spring Warm-up**

April 17-18, 2004 Racing events will be held on Sunday the 18th. Site: Hobby Park  
Patrick Hemple CD, 3005 Bayport Cir. Rowlett TX 75088  
214-607-1561 Events: Slow Rat, Goldberg, TQR, Sport Goodyear and Mouse I

### **JACKSONVILLE, FLORIDA APRIL 24 & 25**

Sat. Mouse 1, Mouse 2, NCLRA Fox, NWest Clown. Florida Slow Rat;  
Sun Slow Rat, Texas Quickie Rat, F2C, F2CN. CD Dale Miller 904-781-9632 email [provector1@aol.com](mailto:provector1@aol.com), or  
Mike Schneider 904-743-4317 email [mas23@comcast.net](mailto:mas23@comcast.net)

### **SCAR Race #3: Knights Joust**

**Saturday, May 15, Whittier Narrows, CA**

## MONTEZUMA, IOWA JUNE 26 & 27

29<sup>TH</sup> Annual Sig contest Stunt, Skyray racing.

## MUNCIE, INDIANA AUG 7 & 8

FCM Speed & Racing

## DALLAS, TEXAS SEPT 4-5

### Charles Ash Memorial

Racing events will be held on Saturday the 4th.

Site: Hobby Park

Bill Bischoff CD, 2609 Harris Dr. Garland TX 75041 972-840-2135

Events: Slow Rat, Goldberg, TQR, Sport Goodyear and Mouse I

## NATIONAL RECORDS

### **SLOW RAT**

JR (70 LAP)	5:16.20	SCOTT MATSON	7/10/00
(140 LAP)	6:47.37	SCOTT MATSON	7/10/00
SR (70 LAP)	4:29.63	HOWELL PUGH	7/20/94
(140 LAP)	10:58.47	DOUG SHORT	7/10/00
OP (70 LAP)	2:36.31	BOB OGE	7/18/91
(140 LAP)	5:24.94	MIKE GREB	7/19/90

### **½ A MOUSE 1**

JR (50 LAP)	2:37.57	SCOTT MATSON	7/15/99
(100 LAP)	5:17.68	SCOTT MATSON	7/17/99
SR (50 LAP)	2:44.68	DAVE ROLLEY JR	7/15/99
(100 LAP)	5:20.11	D.J. PARR	7/16/98
OP (50 LAP)	2:14.35	RYAN/MCCARTHY	7/13/01
(100 LAP)	4:22	RYAN/GIBEAULT	7/15/99

### **½ A MOUSE 2**

OP (70 LAPS)	3:01.24	MACCARTHY/KERR	7/11/03
(140 LAP)	7:16.03	WHITNEY/HALLAS	7/11/03

### **SCALE RACING**

JR (70 LAP)	2:50.65	BOB FOGG III	7/16/91
(140 LAP)	6:08.55	BOB FOGG III	6/23/92
SR (70 LAP)	3:15.12	DOUG SHORT	7/11/00
(140 LAP)	5:40.05	BOB FOGG III	7/11/95
OP (70 LAP)	2:39.38	WILLOUGHBY/OGE	7/15/97
(140 LAP)	5:33.04	BOB FOGG II	7/16/91

### **F2C TEAM RACING**

OP (100 LAP)	3:16.7	ASCHER/ASCHER	7/19/02
(200 LAP)	6:57.36	LAMBERT/BALLARD	7/15/98

### **'B' TEAM RACING**

OP (35 LAPS)	1:32.71	VIC GARNER	7/09/03
(70 LAPS)	3:30.75	TOM SCHAEFER	7/09/03
(35+70 LAPS)	5:09.48	TOM SCHAEFER	7/09/03
(140 LAPS)	NO RECORD ESTABLISHED		

### **RAT RACING (.15 RULE)**

OP (70 LAP)	2:46.50	MCCARTHY/LAMBERT	7/10/03
(140 LAP)	5:58.75	MCCARTHY/LAMBERT	7/10/03
JR-SR NO RECORD ESTABLISHED			

### **NCLRA FOX**

JR (100 LAP)	5:57.11	SCOTT MATSON	7/11/99
SR (100 LAP)	5:28.09	SCOTT MATSON	7/16/02
OP (100 LAP)	5:37.41	MCDONALD/MATSON	7/11/99

### **NCLRA CLOWN**

OP (15 MINUTES)	297 LAPS	DAVE HALLAS	7/7/03
OP (7 ½ MINUTES)	154 LAPS	DAVE HALLAS	7/7/03

### **NCLRA TEXAS QUICKIE RAT**

SR (70 LAPS)	3:04.22	SCOTT MATSON	7/12/01
SR (140 LAPS)	6:20.20	SCOTT MATSON	7/12/01
OP (70 LAPS)	3:00.58	JOHN MCCULLOM	7/10/03
(140 LAPS)	6:21.34	MIKE GREB	7/10/03

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July 4-July 10, 2004  
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For information: <http://www.2004CLWC.org>  
or  
[Bill@WRLee.com](mailto:Bill@WRLee.com)  
[skaluf@modelaircraft.org](mailto:skaluf@modelaircraft.org)

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Hughes)  
e-mail [williamhughes4@comcast.net](mailto:williamhughes4@comcast.net) 630-736-6036

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Livonia, MI 48154  
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D, F-40, 21-S, and 21 Proto. (Barry Tippett)  
e-mail: [btippett@ameritech.net](mailto:btippett@ameritech.net) 734-266-7290

### ELIMINATOR PROPS

Steve Wilk  
3257 Welcome Ave. N.  
Crystal, MN 55422  
763-531-0604  
e-mail [swilk@cpinternet.com](mailto:swilk@cpinternet.com)

### STEVE EICHENBERGER

Custom Fibreglas Performance Props: Moulded tops. Steve  
Eichenberger 480-730-0016

### GILLOTT RACING PRODUCTS

Custom engine reworking, hard chroming  
Tim Gillott  
1063 Harding St. Salinas, CA, 93906  
Phone 831-449-2052

### LONESTAR BALSA

115 Industrial  
Lancaster, TX 75134  
Info 972-218-9663  
Order 800-687-5555  
Fax 972-218-9211  
<http://www.Lonestar-Models.com>  
Contest balsa, full line of Control line supplies.

### MBS Model Supply

PO Box 282  
Auburn KS 66402  
Contact Melvin Schuette  
1-785-256-2583  
Solid Wire Sets and other C/L needs

### MCDONALD RACING

Dave McDonald  
PO Box 384

Daleville, In, 47334  
[DMcD143@aol.com](mailto:DMcD143@aol.com)  
Hard to find racing items, kits, shutoffs

### MEJZLIK MODELBAU

Borova 14, 64400 BRNO  
Czech Republic  
Distributors of PROFI line of Russian FAI speed gear. PROFI  
Engines, Pipes, Pans, Props, Tanks, Handles and FAI Speed  
Models in kit form or ready built. (Tomas Mejzlik) Phone:  
420-5-432-18888 Fax: 420-5-432-18880 e-mail  
[mejzlik@brno.comp.cz](mailto:mejzlik@brno.comp.cz)

### MODEL ENGINE SPECIALTIES

15477 Owens Rd  
Hinckley, IL 60520  
Custom engine reworking, liners chromed and honed to your  
specs, racing parts. (Bob Oge)

### MODEL RACING SERVICES

P.O. Box 976 Cranbourne 3977  
Australia  
Bellcranks, Monoline Torque Units, Counterweights, Custom  
Venturis, Glow Head Inserts, Line Reels, and many other  
handy items. (Robin Hiern) Phone 059-96-0339

### NELSON COMPETITION ENGINES

121 Pebble Creek Lane  
Zelienople, PA 16063  
Manufacturer of NELSON Racing Engines and parts, FAI  
Pans for F2A & FIC Custom Button Heads, Nelson Glow  
Plugs, many other specialty engine items. (Henry Nelson)  
Phone: (724) 538- 5282  
e-mail: [nelcomp@fyi.net](mailto:nelcomp@fyi.net)

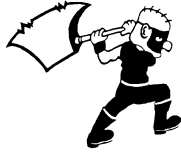


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1073 Windemere Dr.  
Salem, OR 97304  
Full line of quality Glass & C/F Props for C/LSspeed &  
Racing. (Mike Hazel) 503-364-8593

### For Sale, Texas Quickie Rat engines...

Quickie Rat engines. K&B .40s Race prepared with  
All the go-fast modifications that I know of. Call or  
email;  
[Vicgarner@aol.com](mailto:Vicgarner@aol.com) or 925-447-3786



# Eliminator Props by Steve Wilk

3257 Welcome Ave N - Crystal, MN 55422

(763) 531-00604 swilk@cpinternet.com



## Racing

Mouse I & II

\$8.00

C-3	5 X 2 3/4	
C-4	4 5/8 X 3	
C-5	4 5/8 X 3	
C-6	4 1/2 X 3 1/4	
P-4	4 1/8 X 3 3/4	
A-1	4 1/4 X 4	
E-1	4 1/4 X 4	
E-2	4 1/4 X 4 1/4	
E-3	4 1/4 X 4 1/2	
E-5	4 1/4 X 4 3/4	
E-6	4 1/4 X 5	
E-7	4 1/4 X 5 1/4	

\$10.00

C-2p	5 1/2 X 3 1/2	P
M-4p	5 X 3 3/4	P
T-1	5 X 4	
H-2	5 1/4 X 4 1/4	C
MA-1	5 1/2 X 4 1/2	
F-7	5 1/4 X 4 1/2	C

1/2A Team Race

\$10.00

G-7	5 1/2 X 5 1/4	
G-8	5 7/8 X 6	

F2C

\$10.00

TR-A	6 1/8 X 6 1/2	
TR-L	6 1/8 X 6 1/2	
TR-CM	6 1/8 X 6 1/2	1/2
TR-SI	6 1/8 X 6 1/2	1/2
TR-M5	6 1/8 X 6 1/2	1/2
TR-Z	6 1/8 X 6 1/2	1/2
TR-SC	6 3/8 X 6 3/4	1/2
TR-M2	6 1/8 X 6 3/4	1/2
TR-A3	6 1/4 X 6 3/4	
TR-L2	6 1/8 X 6 3/4	1/2
TR-W	6 1/4 X 6 3/4	
TR-JM	6 1/4 X 7	1/2
TR-SS	6 1/4 X 7	1/2
TR-C	6 1/8 X 7	1/2
TR-A2	6 1/8 X 7	
TR-BK	6 1/4 X 7	
TR-M	6 1/4 X 7 1/4	1/2

Quickie Rat

\$15.00

R-2	8 X 8	
PP-1	8 X 8	

## Racing

Goodyear

\$12.00

E-4	6 1/4 X 4 1/2	C
G-3	6 7/8 X 4 3/4	C
G-3n	6 7/8 X 4 3/4	C
G-22	6 3/8 X 5 1/4	
G-2	6 1/2 X 5 1/2	C
G-23	6 5/8 X 5 1/2	
A-3	6 1/2 X 5 1/2	
E-8	6 3/4 X 5 3/4	

15 Rat

\$12.00

G-2	6 1/2 X 5 1/2	C
G-23	6 5/8 X 5 1/2	
A-3	6 1/2 X 5 1/2	
S-5	6 X 5 1/2	
E-8	6 3/4 X 5 3/4	
K-5	6 3/8 X 6	
R-8	6 X 6	
B-6	6 1/2 X 6	
S-1	6 1/4 X 6 1/4	
M-3	6 1/4 X 6 1/4	
SC-1	6 1/2 X 6 1/4	
S-2	6 1/2 X 6 1/4	
CM-1	6 1/4 X 6 1/2	C

\$14.00

R-5	7 X 5 3/4	
T-3	7 X 6	C
T-10	7 X 6 1/4	

Slow Rat

\$15.00

B-1	8 1/4 X 6 1/4	
B-2	8 X 6 1/4	
B-4	8 X 6 1/4	
R-1	8 3/4 X 6 1/2	
G-1	8 X 6 1/2	
M-2	8 1/2 X 6 3/4	C
M-1	8 3/4 X 7	C
E-9	8 X 7	
B-5	8 X 7 1/2	
K-6	8 X 7 1/2	
K-1	8 X 8	C
T-2	8 X 8	
R-2	8 X 8	
PP-1	8 X 8	
T-9	8 X 8	
L-2	8 X 8	C

## Speed

1/2A & Proto

\$8.00

H-1	2 5/8 X 4 1/4	SB
F-3	2 5/8 X 4 1/4	SB
F-4	2 5/8 X 4 1/2	SB
SC-6	2 5/8 X 4 1/2	SB
F-5	2 5/8 X 4 3/4	SB
F-6	2 5/8 X 5	SB
SC-7	2 5/8 X 5	SB

\$5

CW Counter Weight

\$8.00

P-4	4 1/8 X 3 3/4	
A-1	4 1/4 X 4	
E-1	4 1/4 X 4	
E-2	4 1/4 X 4 1/4	
E-3	4 1/4 X 4 1/2	

\$10.00

C-2p	5 1/2 X 3 1/2	P
M-4p	5 X 3 3/4	P
T-1	5 X 4	
H-2	5 1/4 X 4 1/4	C
MA-1	5 1/2 X 4 1/2	
F-7	5 1/4 X 4 1/2	C

A Speed & F2A

I'm not manufacturing F2A props at this time.

But they are available

from :

Jim Booker

[www.cedarcomm.com/~fly](http://www.cedarcomm.com/~fly)

Mejzlik Modellbau

[www.mejzlikmodellbau.com](http://www.mejzlikmodellbau.com)

21 Proto & Sport Speed

\$12.00

E-8	6 3/4 X 5 3/4	
K-5	6 3/8 X 6	
R-8	6 X 6	
B-6	6 1/2 X 6	
S-5	6 X 6	
S-1	6 1/4 X 6 1/4	
M-3	6 1/4 X 6 1/4	
SC-1	6 1/2 X 6 1/4	
S-2	6 1/2 X 6 1/4	
CM-1	6 1/4 X 6 1/2	C
SC-2	6 1/2 X 6 3/4	
G-5	6 1/2 X 7	

## Speed

B Speed

\$14.00

SC-3	7 1/2 X 7	
P-2	7 1/4 X 7	
G-6	7 X 7	
T-4	7 X 7 1/4	C
SC-4	7 1/2 X 7 1/2	
T-5	7 X 7 1/2	C
L-1	7 X 8	C
M-5	7 1/2 X 8	
SC-5	7 1/2 X 8	
Z-1	7 X 8 1/2	

Formula 40

\$15.00

B-5	8 X 7 1/2	
K-6	8 X 7 1/2	
K-1	8 X 8	C
T-2	8 X 8	
R-2	8 X 8	
PP-1	8 X 8	
T-9	8 X 8	
L-2	8 X 8	C
K-3	8 1/4 X 8	
F-2	8 X 8 1/2	C
T-7	8 X 8 1/2	C

D Speed

\$15.00

K-4	8 X 9	
G-4	8 X 9	
F-1	8 X 9	C
T-8	8 X 9	C
M-7	8 1/8 X 9 1/2	
S-4	8 1/4 X 9 1/2	
P-3	8 1/4 X 9 3/4	C
P-1	8 1/4 X 10	

These are the most popular props for these events. But don't over look the props around them. They could be the

next Winner.

Clown Race

Due to the variety of engines used in this event. I'm unable to recommend a prop.

## Combat

1/2A

\$8.00

C-1	4 1/4 X 2 1/2	
C-3	5 X 2 3/4	
C-4	4 5/8 X 3	
C-5	4 5/8 X 3	
C-6	4 1/2 X 3 1/4	

F2D

\$10.00

C-7	6 X 3 1/2	
C-8	6 1/8 X 3 1/2	
C-9	6 X 3 3/4	
C-10	6 1/8 X 4	

Slow/Fast

\$15.00

T-13	8 X 3 1/2	C
T-6	8 X 6	C

Carrier

\$16.00

M-6	9 X 7	
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Pylon

\$14.00

P-2	7 1/4 X 7	
RB-3	7 3/8 X 7 3/4	
RB-2	7 3/8 X 8	
RB-1	7 3/8 X 8 1/4	

## Stunt

1/2A

\$10.00

A-2	5 3/4 X 3	
T-12	5 7/8 X 3	

\$14.00

T-14	7 X 4	
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\$16.00

T-11	9 X 3 1/2	
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\$17.00

R-4	10 X 3 1/2	
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\$18.00

R-3	11 X 5 1/2	
-----	------------	--

\$18.00

R-7	11 1/2 X 5 1/2	
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\$25.00

T3-1	10 X 3 1/2	
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Single Blade

Cuff Blade Design

Pusher

Half Hub

3 Bladed

New for 2001

New for 2002

New for 2003

New for 2004

These props are in the process of being molded, and will be available in the near future.



## **Officer's Addresses**

### **President**

Bill Lee  
601 Van Zandt County Rd.4815  
Chandler, Tx 75758  
Phone 903-852-5599  
Email [Bill@WRLee.com](mailto:Bill@WRLee.com)

### **Vice- President**

Jim Holland  
1161 Loughborough Dr. Apt #5  
Merced, CA 95348  
Phone 209-726-0357  
Email [jgmholland1959@yahoo.com](mailto:jgmholland1959@yahoo.com)

### **Secty/Treas**

Mike Macarthy  
4704 Hillsboro Ct.  
Santa Rosa, Ca 95405  
Phone 707-542-2492

### **Editor**

Tim Stone  
4919 Country Oaks Dr  
McHenry, Il 60050  
Phone 815-344-5728  
Email [tstone@mc.net](mailto:tstone@mc.net)

### **Northwest Representative**

Mike Hazel  
1073 Windmere Dr. NW  
Salem, OR 97304  
Phone 503-364-8593  
Email [ZZCLspeed@aol.com](mailto:ZZCLspeed@aol.com)

### **Midwest Representative**

Stewart Willoughby  
95237 Aero Drive  
Naperville, Il 60564  
Phone 630-904-7011  
Email [StooDDS@aol.com](mailto:StooDDS@aol.com)

### **Northeast Representative**

Brian Silversmith  
86 Kingsland Circle  
Monmoth Jct., NJ 08852  
Phone 908-274-8945  
Email via Phil Valente [Phil\\_Valente@millipore.com](mailto:Phil_Valente@millipore.com)

### **Southwest Representative**

Doug Mayer  
1727 Penmar Av #2

Venice, CA 90291  
Phone 310-392-9008  
Email [mayer@kmd-arch.com](mailto:mayer@kmd-arch.com)

### **South Central Representative**

Russ Green  
615 Oldham Ln.  
Granbury, TX 76048 (817) 573-7416  
Email [jgreen2@charter.net](mailto:jgreen2@charter.net)

### **Southeast Representative**

Bob Whitney  
456 Garvey Rd. SW  
Palm Bay, Fl 32908  
Phone 321-676-0554  
Email [F2CRACER@aol.com](mailto:F2CRACER@aol.com)

### **North Central Representative**

Steve Wilk  
3257 Welcome Ave. N.  
Crystal, MN 55422  
Phone: 763-531-0604(hm)  
E-Mail: [swilk@cpinternet.com](mailto:swilk@cpinternet.com)

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At the address given on this page. While this is preferred format, we will take submissions in just about any format, they can be written, typed or mailed to Tim Stone.

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*Proposal for new NCLRA Logo...by Steve Wilk!!!*