



A gaggle of California Clowns. Clockwise #7 Dave Hull,
Kevin Kusik, Dave Braun & Ron Dulys' planes



National Control Line Racing Association
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Chandler, TX 75758

To:

Torque Roll!!

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Issue # 77
December, 2007
In this issue...
Focus on Clown Racing
'B' Team Racing fuel mix

President's Column Bill Lee

2008 NATs Schedule: After a lot of back- and- forth between John Bruman and myself, throw in a little feedback from a few of you, and then add AMA's requirements in, here's what we came up with.

Monday- Tuesday - Qualifications:

318 F2C (O)

317 Scale Race(JSO)

NCLRA Clown Race (JSO)

Monday and Tuesday are qualifying rounds. We will fly at least two rounds in each event each day.

Wednesday - Finals:

318 F2C (O)

317 Scale Race (JSO)

NCLRA Clown Race (JSO)

The Finals for each of these events will be held

Wednesday

NCLRA F2CN (JSO) (Will be flown after Finals are complete)

Thursday:

311 Rat Race (JSO)

312 Slow Rat (JSO) (Special Rules!)

NCLRA Quickie Rat (JSO)

Event 312 will be flown with the rules as have been submitted to the CL Racing Contest Board for the current rules change cycle.

Friday:

313 Class I Mouse (JS)(O)

NCLRA B-TR (JSO)

Note that this is a slightly different schedule than the (very!) preliminary version we published in the October issue. Every event that was requested to be run and for which someone stepped forward to sponsor has been included. The schedule was adjusted to best meet the needs and desires of those who voiced their concerns.

Rebel Rally: Mike Schmeider once again organized and hosted the Rebel Rally in November. Rather than being held at the Navy Base near Jacksonville, Mike and his crew got the site in Stark, FL. For the weekend. This site is a large parking lot with plenty of room for two, perhaps three, circles. Adjacent is a restroom building which served our needs much better than the standard port- a- johns. On the other side was a large grass field where the combat boys were holding forth.

Turnout was good. The number of events was held down, but that seemed to let everyone emphasize what was being flown. There was good turn- out in all events, 8 entries in F2C as an example. It was a good contest, a good site, and enjoyed by all.

Hardcopy Torque Roll distribution: All of you received a paper copy of the October issue. This will be the standard mode now. But we will also continue to send the electronic form as well if you have an e-mail address in your profile on the NCLRA website.

I know that there are some who would just as soon not get the paper copy since their preference is electronic. When I get a round tuit (and a chance to take a deep breath!), I will set up the website so you can mark your member profile to be electronic- only.

By the way, the hard- copy distribution allowed us to include a separate membership renewal sheet. I hope everyone has used it to renew your membership for 2008. Or you can go on line on the NCLRA website and use the renewal and PayPal options that are available there.

Lonestar Balsa fire: The day before Thanksgiving, the building housing Riley Wooten's Lonestar Balsa burned. It was a total loss. Everything was destroyed. I have been in frequent contact with Riley and Mike Wooten, his son who actually runs (ran?) the business.

Last Friday (November 30) I walked through the ruins with Riley. It was heart- breaking! The Lonestar site was "balsa heaven". This was a warehouse- sized building with balsa from one end to the other, raw blocks on pallets from Ecuador, cut and sanded sheets and blocks, ... just EVERYTHING that a modeler can dream about when building a model.

In addition, Lonestar had a really good hobby shop associated with the balsa business. And since Riley was a CL person above all else, the hobby shop was strongly oriented towards our needs. Just about any sort of building supplies you might imagine, and a lot more.

But Riley also had a lot of his history stored in that building as well. Many of his original models, many that were classics in their own day. An engine collection. A collection of RC Modeler magazines that included every issue from the very first to the last one published. And more...

Walking through the debris left from the fire. Finding the melted remains of a twin- stack OK 35 (I think that's what Riley said it was). Or an Olsson 23.

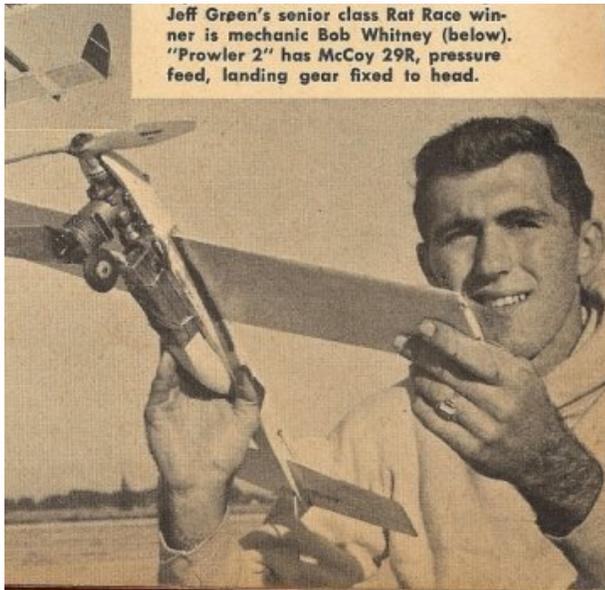
Gone. All gone.

A sad day for Riley and Mike, and a loss we will all feel now or in the days and months to come as the loss of a major part of our hobby is felt.



The remains of the balsa cutting room at Lonestar

SOUTHEAST REPORT- BOB WHITNEY



Bob circa 1963!

Control line is not dead, just racing. The first of the month the Jacksonville club put on a racing contest at a great site.

Theres' room for two circles, indoor plumbing and food near by. The problem was again low entries. I did not get a copy of the results so will have to wing it. I think Clown had the most entries. Jason Allen topped the rest of us with a 310 final. Ralph and Pat Aaberg were 2nd after a long layoff.

A good friend of mine, Jim Bradley is a top notch FF flier that has been piddling with U/C. He built a Fox racer and a Texas quickie rat and proceeded to out pit the other two entries to win Fox his second time out!

Rat was a Lee, Green benefit. I don't know who got who??

F2CN had three or 4 entries one was Scott Jenkins young son sorry I didn't get his name, but he did a great job for his first time flying with the big guys, in fact I think he won F2CN.



Jim Bradley with Fox entry.

F2C had five entries with Wallick and Wallick out for the first time in a while, young Jenkins was also entered. Russ Green gave F2C a try and flew for Bill Lee. Fluker, Lambert, and Allen, Whitney were the other teams. Everyone got 3 heats. In the final Russ Green was thrown to the Lions with Jason and Tom. He started getting into trouble about 1/2 way through the first tank and wisely shut down. With about 185 laps of two up and both engines running great both Lambert, 1st and Whitney 2nd came in under the existing US record to end a fun two days.



Jim Bradley with Texas Quickie Rat

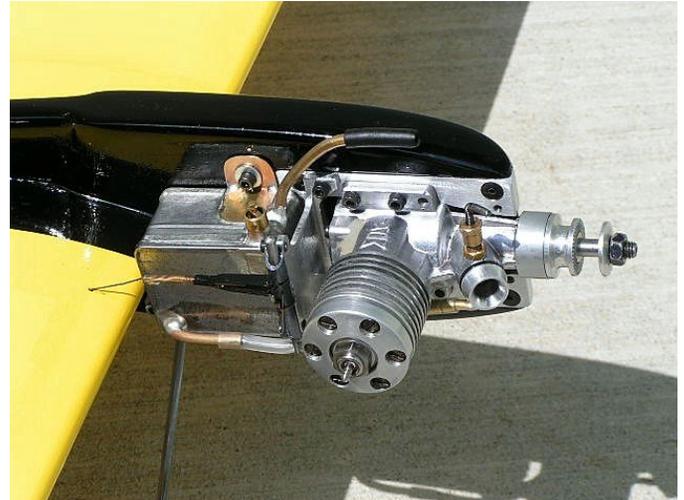


Jim Bradley lays up composite leading edge for wing of his Fox racer. This is about to be draped over the white form in background.

Last weekend there was a U/C fly in at an RC field in Lake Wales, Florida. This is the 3rd year for it. As the pictures show U/C is not dead. I counted 40 planes on the flight line. All came just to fly. When I left at 4pm they were still flying...



No shortage of Stunt fliers.



As run at the N.W. Regionals with Moki power.

North Central Report - Les Akre

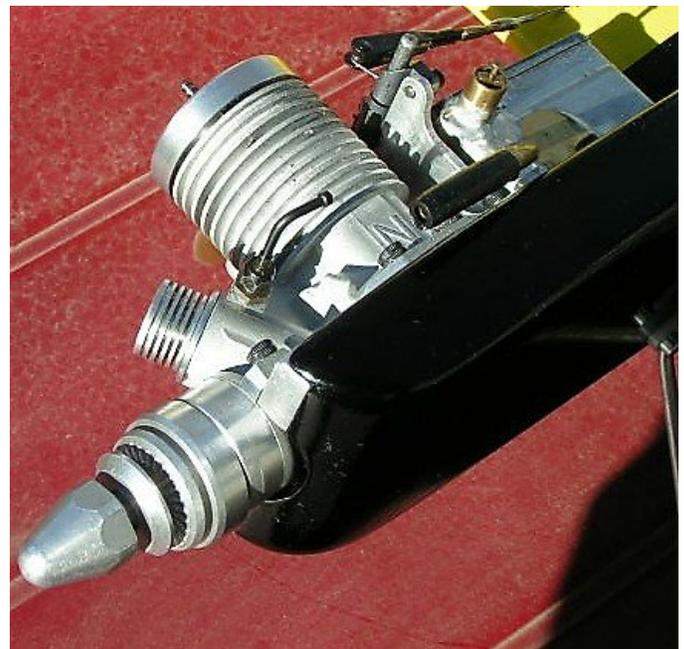
We are now officially into the building season here in the North Central District. Not much to report as this is generally a slow time of the year with everyone gearing up for the holiday season, and thinking of what models to build for the upcoming season.

This issue's focus is on Clown Racing. It is somewhat interesting that this particular event, which was born in the N.W. as an event to train pilots and pitmen, has now become so popular and competitive. I guess part of the appeal is that almost everyone who competes feels they have a chance at winning.

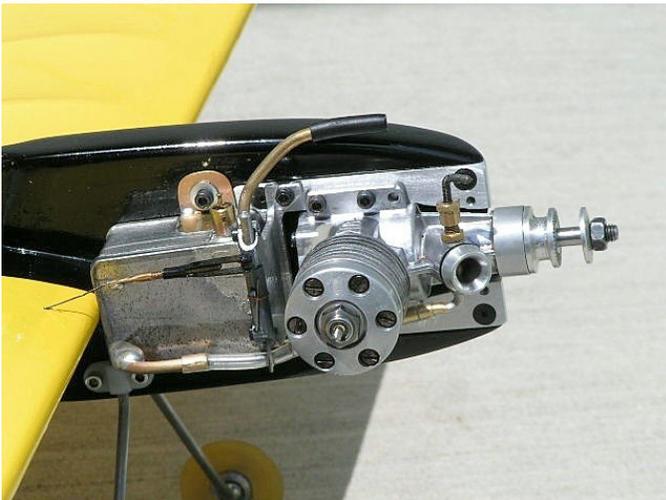
There are many combinations of engines, fuel tank designs, and even race strategies to be seen in this event.

My airplane, shown in the Pictures below, has been a work in progress so far. Its best outings to date have seen a 150 lap best heat time, and a 305 lap feature time.

Shown in the pictures are the two different engines that I have used so far, the Moki .15 sport, and the Nelson .15 FISE Diesel converted to Glow.



Same airplane with Nelson power...



My airplane weighs in at 21.5 oz., which is a bit portly, but it does handle the wind pretty well so maybe that's not a bad thing. The fuel kill is a Mejzlik unit originally available for F2A use with the trip wire reversed, and uses a homemade bracket. Space gets pretty tight on the front of a Clown!

Henry Nelson has a new "hot" plug available now, and I hope to try some this coming season.

Everyone have a Happy Holiday season.

NORTHWEST DISTRICT REPORT, by Mike Hazel

Greetings, Racers! The Northwest region's last contest of the year was the Fall Follies, held on October 6 & 7, 2007 in Salem, Oregon. This is primarily a Stunt contest, with some racing thrown in for some variety. While the weather this time of year is usually nice, this year it was nice and windy.... Windy enough that one of the events was cancelled.

First event up was NW Sport Race. The Ryans had the best heat times, but opted to sit out the finals leaving just Bob Smiley and the Nitroholics team (John Thompson and Mike Hazel) for a two-up 140 lap feature. This was Bob's first time back in the racing circle for thirty years! He was elated to snag a first place, as the Nitroholics team suffered fuel setting problems.

Thanks to the racing officials who took care of us: Bruce Hunt, Dan Rutherford, and Joe Just.

Full Results:

NORTHWEST SPORT RACE (4 ENTRIES)

1) Bob Smiley	10:26.38	140 laps
2) Nitroholics Racing Team	10:27.66	140 laps
3) Todd Ryan	4:07.59	70 laps
4) Mac Ryan	4:18.38	70 laps

NORTHWEST SUPER SPORT RACE (2 ENTRIES)

1) Todd Ryan	7:45.16	140 laps
2) Nitroholics Racing Team	8:16.99	140 laps

NORTHWEST FLYING CLOWN RACE (3 ENTRIES) Event cancelled

The management committee for the NW Control Line Regionals recently met for a planning session for the 2008 contest. It was decided that the same racing events held in 2007 will be repeated in 2008. There will be some schedule tweaking on the lineup. More news on that later.

Tight lines and quick pits! Mike Hazel, Po Box 126 Mehama, Oregon 97384. Phone: 503-859-2905
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SOUTHWEST REPORT- RON DULY

Congratulations to Asher/Asher for making the F2C FAI Team. They were the real stealth team from California . A/A and D/D represented the SW Region very well. Thanks guys!

Racing in SoCal is over for the year. Toys For Tots was our final event for 2007 and a fine time was had by all. Several huge bags of toys were collected for kids that will appreciate them. Helping them makes one feel good all over. Weather at Whittier Narrows was cool (perfect for two new A Speed records over in the Speed cage) and perfect for our Fall classic. Complete results will be posted on the Racing Forum but one picture, being worth a 1,000 words, will certainly make my efforts easier.



Shown are the winners of the Super Slow Rat race. Left to right are 3rd Place Dave Hull/Dave Dawson, 2nd Place Don Burke/Ron Duly and 1st Place Dave Braun/Dale Long. Dave Braun was flying his original- design SuperFly (something you wouldn't know from looking at the currently available kit. An important acknowledgment somehow overlooked). Braun/Long were running a....are you ready for this.... a Fox! They beat two OS-powered planes. So much for plain-bearing 25 engines "ruining" the SSR event! Notice in the background the stunter doing stunts. Yes, that's what they do. They certainly do. The row of cars are lined up near the Speed cage. Not shown are the two grass Combat circles and the cement Carrier deck.

Whittier Narrows also includes a tether car track and R/C area. The car guys ran on Sunday and we enjoyed hearing them. They go so fast that you don't watch them, you just listen to them. Dale

Long, Pitman for Dave Braun, served up excellent Sloppy Joe's for lunch. We invited the Speed folks to join us. Big mistake! While we were involved in flying a race, they came over and cleaned out the food. The leftovers were good though. Dale also makes excellent shut-offs for race applications. Darrell Albert CD'd the Sunday races while Don Burke CD'd Saturday's F2C races as well as doing all the computer input to give us instant results.

Darrell always brings along his full line of racing goodies (Raceralbert) for us to stock up on. Jim Holland, Doug Haas and Bob Murphy made the trip down from NoCal to join in the fun. Jim returned home with two First's so I believe he had a good time. Well, actually he had two good times. Team Rolley/Rolley made the long trip from Colorado and put in some good times in F2C. Charlie also got to "enjoy" our local event, Formula Unlimited. Ask him how much fun a HB 40 PDP-powered Shoestring is to hang onto for 140 laps. SCAR also welcomed a new member, Scott Dinger. He is Mr. Muffler for the stunt crowd, making a variety of excellent mufflers for their application. Mssrs. Hull and Dawson helped Scott see the light - Racing Rules! Our next race will be at the Sepulveda Basin in February and then all eyes will be on Cabin Fever in Arizona in April. Thanks to all of the Southwest members for another excellent year of quality racing.

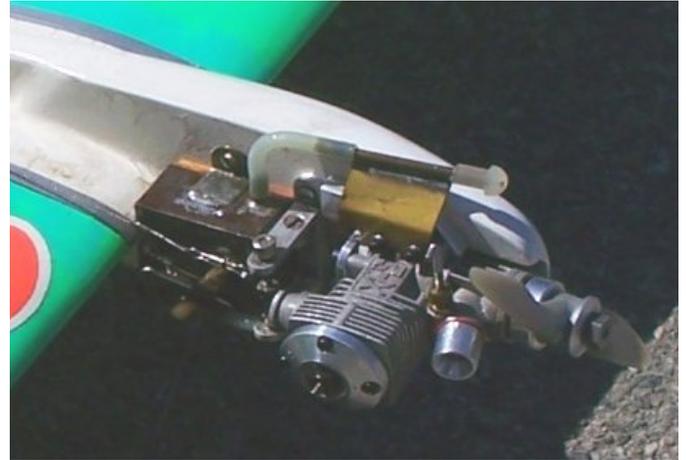
EDITORS' COLUMN- TIM STONE

For this issue I solicited contributions about Clown racing from some of our members. The 2008 Nats will feature 2 days of preliminary races and a final race on the 3rd day, so this event may start to appeal to even more people. Dave Hull sent me the following photos; here are my observations.



Kevin Kusiks' model takes the basic approach. Not much to maintain or go wrong here. The motor is a Supertigre G15-.19 with home made venturi. No shutoff, with this tank setup it would be difficult to fit one in. Note the fuel filler tube is soldered to a

brass plate bolted to the engine lugs which is a typical setup for this event. A true 'Old School' Clown.



Dave Braun has a lot of hardware fit in this small front end! Engine is an XTM .18 truck engine conversion. These engines come with a normal aircraft type shaft & front end drive washer. To convert them for aircraft use Dave has fabricated a backplate, venturi/spraybar & head button retainer. This retainer looks like it was borrowed from a Supertigre x-15. Dave also sells the shutoff pictured here. Note trip wire going back to the elevator horn. Unlike most, a square tank rather than a wedge tank is used here. Single overflow vent on the side of tank rather than the top is also unique. An alligator clip is used to hold open the overflow tube during pit stops. Dave uses a 'jet fill' filler attachment that is still available from MBS model supply. While it is hard to see, a small line clip is used to connect the shutoff to the cable, a neat idea for serviceability.



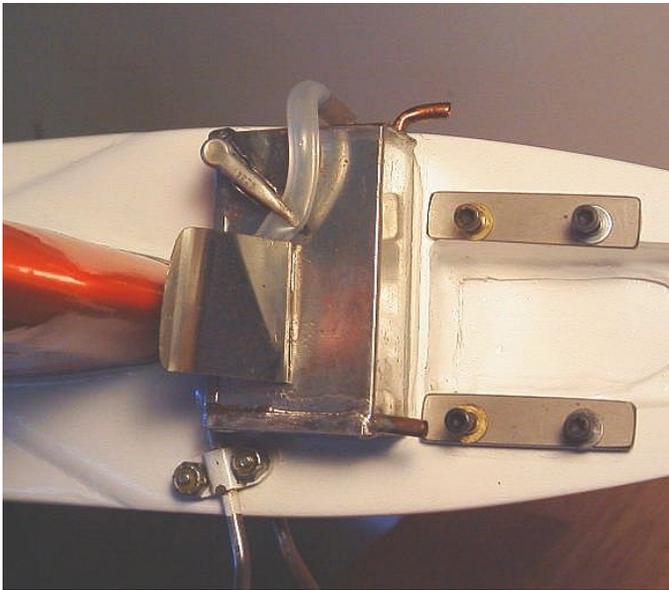
Dave Hulls' Clown is neat as a pin! Engine is an OS CVA .15 aero R/C conversion. The RC carb has been replaced with what appears to be an older OS Max venturi & needle valve.

Tank setup with the fuel feed line exiting out of the front makes fitting in a shutoff nearly impossible. Shutoffs are not allowed to be used during the race, only for safety purposes.

Dave's tank is neatly done. Notice that the overflow tubing is surgical tubing, not nearly as prone to splitting as silicone. In addition Dave has cushioned the alligator clip with a sleeve.

Tank mounting lugs are nice & wide for a sturdy mount. The engine is mounted on a hefty aluminum plate that reduces power robbing vibration. Tank is a uniflow type, note that the filler/vent tube is located directly above the fuel pickup tube.

Tank shape is 'coffin' style with the fuel pickup at the widest part of it. Clown racing is a limited fuel capacity event, so tank design must be optimized to use every last drop of gas.

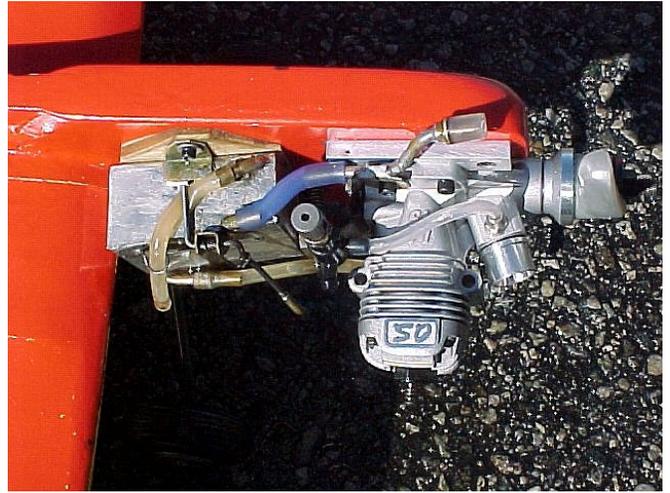


Bob Christ of Arizona sent me some photos of his clean setup. It looks like Bob has tried to place the fuel pickup tube as high as possible. The optimum placement would be on horizontal center with the venturi, but this is not possible with the limited space up front.

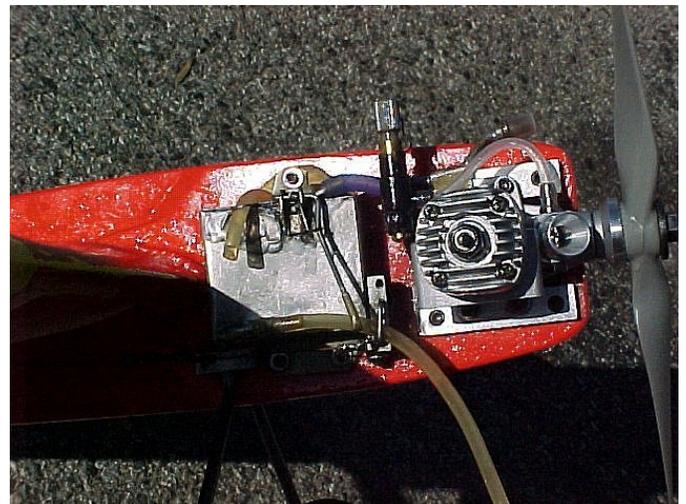
Other noteworthy features are the exhaust deflector on the tank that is wedge shaped with the widest part up front.



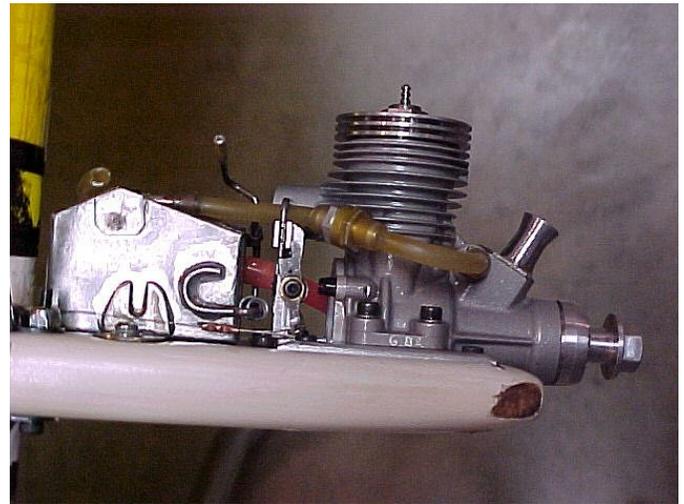
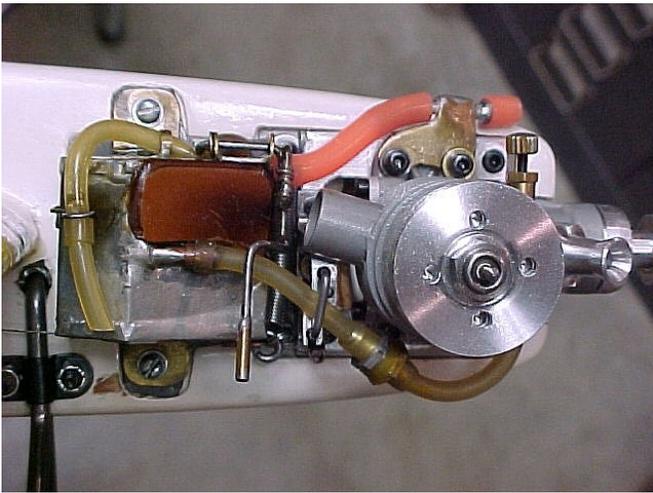
Here it is shown with motor, a Novarossi CX .15. There is no room for a shutoff with this setup, and barely room to squeeze in a fuel filter!



Ron Duly sent me pictures of several California Clowns. Above is Don Burkes' model that has several interesting features. The OS .15 LA is more of a sport motor but reports are that Don is getting superior mileage with it. It is mounted to an aluminum plate that allows a variety of motors to be swapped in. The tank is a rear wedge design, note that fuel pickup tube is in the rear. This allows more room for shutoff to fit in. Apparently a plywood wedge behind the tank has been used to fine tune the setup.



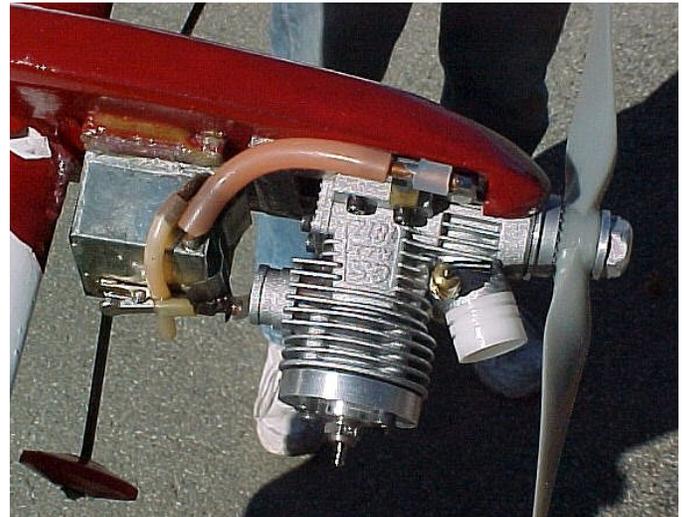
On the side of the tank Don uses a unique spring loaded wire that when depressed for refueling does 2 things; it pinches off the fuel pickup line to prevent flooding, and at the same time open up the overflow tube. Plenty of room is left over for a small fuel shutoff.



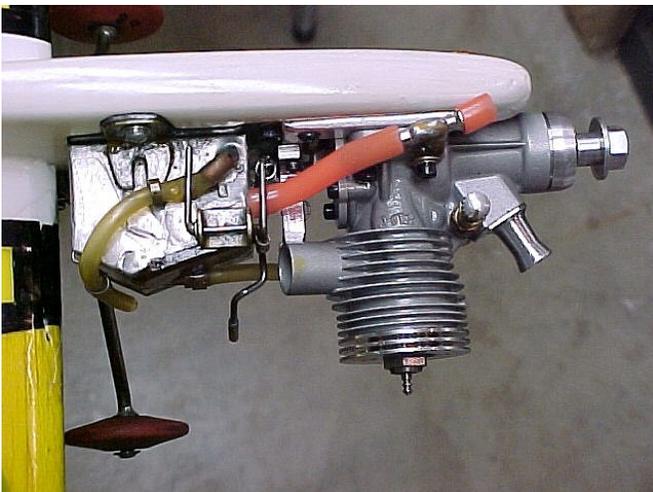
The view from below. This is a well planned setup.

Ron Duly uses a similar setup on his model that won the 2004 and 2006 Nationals with Cyclon PC-6 and Fora engines. Ron is now using a Zalp engine. The brown thing on the tank is a piece of micarta to help deflect the hot exhaust. Fuel pickup is in the middle of tank which is unusual, here is the explanation in Rons' own words:

“Years ago, I built a Formula Unlimited plane with the pick-up at the bottom. It would go from rich to lean depending on what height it flew at. After that, I've tried to center the pick-up on the engine C/L on profile planes. Was it science or did I goof years ago, who knows? Any way, that is why I did it on the Clowns. One other note, between the tank and the fuse. side is a sheet of lead. A forward CG is a good thing on these Clowns. Easier to fly and much easier to whip..... I mean, get it back to the Pitman.”



Jim Hollands' 2007 Toys for Tots contest winner uses O.S. Max .18 TZ car engine conversion. It looks like Vic Garner had something to do with this engine... A simple, clean setup, the OS has tons of power. Note that tank is square and a wedge is used to adjust the angle of fuel pickup. Jim keeps his setups simple & is no stranger to the winners' circle.



Notice in the top view that the fuel filler tube is angled away from the tank & ends inside of the innermost edge of tank. This prevents any fuel siphoning out. In the side view it is also apparent that the fuel filler tube is placed much higher than the top of the tank.



Al Ferarros' 2006 Nats winner is a model of simplicity. He always seems to place well with this rig. Motor is an O.S. TZ .18 car engine, note the stock head clamp has been sawed off and rounded off. Fuel filter on the filler pipe prevents any junk from getting into the tank. The fuel tank appears to be an ancient Acme brass unit with vent & feed lines reconfigured.

Note the fill pipe & overflow pipe exit inside the centerline of the fuselage. Al's setup is one of the few that does not have a pinch off for the overflow tube, but apparently it works well.



Bottom view shows fuel pickup tube location at the widest part of tank & at the very bottom. Little details like wiring on the fuel lines can help prevent ruining your day!

Thanks to all that contributed to this article. There is quite a variety of mechanical setups & engines used for this event which makes it more interesting. Both simple & complex setups have been presented here, but there are properties that almost all setups have in common. Like all of racing the mechanical setup is only a part of the equation.



Thanks to Bill Lee for these photos of Russ Green's Fora .15 powered Clown. This F2D Combat engine makes major power in spite of the tiny 4MM venturi. Russ reports airspeed of 17.9 seconds & mileage of 42 laps per tank. No shutoff, notice the cushioned alligator clip overflow pinch off.

Development of a simple "green" Classic B racing fuel- by Lance Smith (AU 62894)

One of the "black arts" of racing glow plug engines is the formulation of fuel, with recipes closely guarded by the associated SSFK, "Secret Society of Fuel Knowledge". I've been trying to get to the bottom of this art since the 1960s, when I first started racing B team racers with my trusty ETA 29 6c and some rather radical and highly unsuccessful flying wing designs. However I digress; back to the fuel story.

What fascinated me as a budding organic chemist in the '60s was the myriad of individual fuel ingredients used to power B T/R engines. I have since collected many articles on fuel formulation.

The winning formulas included various combinations of some or all the normal stuff: isopropanol (IPA), benzene, toluene, xylene, nitromethane and nitrobenzene (see Table 1).

Table 1 Historical fuel formulas

Fuel Components	1965 ish		1975 ish		
	G21/29 NZ range	NZ std	Aussie range	Aussie medium range	Aussie Short range
Number	1	2	3	4	5
Castor Oil	20.0%	20.0%	25%	20%	20%
MiliTec					
Xylene	13.0%	20.0%		20%	10%
IsoPropylBenzine, IPB			40%		
Propylene Oxide					
DTME					
Isopropyl Alcohol			20%		
Nitromethane	13.0%	20.0%	12.5%	20%	30%
Methanol 100%	54.0%	40.0%		40%	40%
Ethanol 98% $\frac{2}{2}$ MeOH					
NitroBenzine			3%		
Total	100.0%	100.0%	100.0%	100.0%	100.0%
COMMENTS	3/16 venturi 113-115 45-50 laps bloody hard to start	Xylene is harsh on the plugs	Cox 15 venturi bored to 3/16 008 head clear. 115mph for 75-80 laps	115 mph for 40-45 laps	118 mph for 35-40 laps

They also included such real exotics as “orange oil” ([d-limonene](#)), detergent oils, cumene, benzol, water, petrol and dinitromethane, just to name a few. I think some racers were only flying for the smell!

Then there was the “swear by” brigade; those who swore that no-one would ever get anywhere near the podium unless they used this or that impossible-to-get exotic ingredient (a bit like F2C today!!). I do remember a very new B T/R pair who simply got hold of the best engine at the time (a ST21/29 RV) in fairly standard form, and concentrated on teamwork and a simple fuel of IPA and methanol. They managed to blitz everyone with speed, range and excellent restarts. (“Funny,” I thought. “Isn’t that the holy grail of B T/R?”)

They came unstuck really badly during the finals at the North Island Easter Champs of 1969 when the losers got together and had them thrown out of the competition for whipping, on the premise that they must have been whipping, because they were going so fast! They were of course stunned by their expulsion, and were never seen in the team race circles again. I somehow ended up with their motor.

Bad sportsmanship of the time aside, their approach taught me an important lesson. “To go fast, boy, concentrate on a good model, a good engine and good teamwork.” To hell with the exotics, simple is best. “Where is he going with this?” you may well ask. However, taking this lesson into account, I searched around for the fuel element in this multi-vectoral solution to winning an event,

thinking the other elements will come with practice and a good engine builder.

When looking at formulations, one has to take into account changes in engine design. The old-fashioned, long-stroke, cross-flow, slow-revving, low-compression-ratio engines of the 1960s and ’70s could swing a much larger prop on much higher levels of aromatic hydrocarbons than our modern, high-compression-ratio Schnuerle/boost ported ABN and ABC short-stroke, high-revving technological marvels of today.

After several years of intensive fuel ingredient testing, with few successes and many failures it became very apparent that modern engines are very touchy when it comes to changing their feed composition (see Table 2). The more one adds of ingredients for range, the more laps one gets; but engines tended to overheat and become hard starters as the level of aromatics (xylene, toluene and benzenes) and complex alcohols (IPA) goes up in the formulation.

Table 2 Modern fuel formulations

Fuel Components	Modern Fuels			
	Modern long range fuel	Std range fuel	Variation 1 standard range	Modern long range
Number	6	7	8	9
Castor Oil	19.5%	19.5%	19.5%	19.5%
MiliTec	0.5%	0.5%	0.5%	0.5%
Xylene	7.5%	5.0%		
IsoPropylBenzine, IPB	7.5%	5.0%	15.0%	40%
Propylene Oxide				
DTME				
Isopropyl Alcohol	25.0%	25.0%	20.0%	20%
Nitromethane	20.0%	20.0%	15.0%	20%
Methanol 100%		25.0%	30.0%	
Ethanol 98% $\frac{2}{2}$ MeOH	20.0%			
NitroBenzine				
Total	100.0%	100.0%	100.0%	100.0%
COMMENTS	53 laps at 17.9/7	45-46 laps 16.5 -17.5/7 Problem with blowing plugs in LA25	46-47 laps but hard on plugs	63-67 laps no change in speed but very hard to start hot or cold

Aromatics as ingredients

I have proved that one can do 67 laps on 45% isopropyl benzene (IPB, or cumene), but when the engine stops it’s very hot and stays stopped. Also, a modern T/R engine running on 45% IPB is much more critical, whether starting cold or hot. The inside of the combustion chamber goes black. It’s hard on plugs and it hard on wrists. Toluene, benzene and xylene behave in a similar manner, but

engine tuning is far more critical than on IPB. Lowering the aromatics results in improved starting and reduces the lap gain, but more than 10% aromatics in the fuel composition causes things heat up and start to become quite difficult. When researching fuel, I discovered that benzol is not simply benzene as I thought, but coal distillate, very commonly added to petrol in the 1940s and '50s. It is a natural fall of xylene and benzene—about 50% of each—and was a very common solvent once.

“Why is this important?” you say. Well, in the old days we used benzol as a fuel ingredient in B T/R and it worked very well. John Hallowell and I found that an equal mixture of xylene and IPB works better as a range ingredient than either IPB or xylene alone at the same level. It's called synergy: where the effect of the mixture is actually greater than the sum of the individual effects. One can use less and still get the same effect. Less heat means less carbon and more laps.

Higher alcohols

Upping the IPA slows the laps, but you do get more of them. You can just run on just IPA with 15% nitro, but it takes all the engine's power away. Starting does not seem to be a problem, but it runs cold and the needle setting is very insensitive. Taking the stopwatch as the final arbiter (a very fine and completely scientific saying from Robbie Hiern), the more you add the slower you go.

Nitromethane

This is a simple situation here; more nitro means fewer laps. At more than 15% nitro there is no apparent gain in power, just unburned nitro and more laps lost. The reason is simple: nitromethane burns relatively slowly in the combustion chamber, and in modern, high-RPM engines there is not a lot of time to fully burn up nitro at levels over 15%. Upping the level beyond this point gives no advantage. You could try raising the compression to take advantage of the extra nitro, but this seems to “make everything go supercritical”, as the nuclear boys say.

So, after all the hours of testing with many different fuel brews, what is the answer?

The ultimate brew?

One can use the synergy of added ingredients and get quite a satisfactory fuel. A mixture of 20% castor oil, 15% nitro, 2.5% IPB, 2.5% xylene, 20% IPA, a slug of Lubrizol 52 and the remainder methanol will produce a good starting-range fuel that seems to be great for 46–7 laps. Play around with upping the IPA and reducing nitro a little bit and you may get 52–3 laps. A tiny slug of water (1–2%) can help keep things running cooler.

(Wow, maybe that's the secret ingredient!!) However, make sure you tune for the day. The interaction between fuels and motor is very sensitive to changes in temperature and humidity, and we have found that we can get 48 laps on this fuel one day, but on others we are scratching to get 43.

Now what is the ultimate secret? There has got to be one here, otherwise I would not be writing this article.

Look at the problem another way. What happens if we pull some of the ingredients out of our hard won formulation?

First, take out the IPA. What happens? Laps go down a little and lap times also go down. No problem getting at least 36–8 laps at 16.4–16.5/7.

Next, pull out the IPB and xylene. Lap times go down to 16.2/7, but the number of laps per tank goes down too—to 33–4. That's not good. You need at least one full lap on the glide per tank to get through a race. However, it proves that the aromatic derivatives actually have the single most effect on laps and the least effect on speed.

Lesson one: it's probably a good idea to get rid of the IPA if you want a fast heat time. But how do we get rid of the aromatics? They are robbing power too.

Brewed cane juice ?

There is a solution and it requires a radical rethink. Since the cane farmers in Queensland have received a government subsidy for making ethanol as a fuel, Bunnings has been selling a super-cheap methylated spirits that is 2% methanol and 98% ethanol.

In a very radical move I decided one day to try the meths. It's a higher alcohol, so it should work in place of methanol. I made up a standard mixture of 15% nitro and the rest Bunnings' ethanol. I fired it up one day on the flying field on the MRS LA25 and it shocked me by springing to life instantly. The setting, left over from the previous week's B T/R practice, was quite rich; it tuned well and I let her go. Well, it did 46 laps at 17.1/7 on the first try. It was still running rich. A refill, another instant restart and a retune delivered 16.9/7 for 48 laps.

After a few weeks of playing around, I could get 16.5–16.6/7 for 46 laps on 20% nitro. I used the formula to get into the National finals. With a little bit of a lean tune and an even luckier change in the humidity on the day, those 46 laps turned into 52 for the finals. Now I had a simple formula, no IPA and no nasty aromatics, and it has given laps and good lap times.

“Where to now, Lance?” you say. Time for me to retire from the Holy Grail of fuel quest? Naah!

As Apple Computer says, resting on one’s achievements is actually going backwards. So forwards we go. Bunnings’ meths is an excellent range and power fuel; it’s pure alcohol, its cheap and it works. So what can we do to improve it? It’s a little down on power over methanol, but that’s not too significant. The oxygen level of the final fuel is less than with methanol, but that’s why we are getting the extra laps.

Adding a little more nitro and a dash of some propylene oxide to help burn up the extra nitro actually does not decrease the laps (going to 20% nitro seems OK), but don’t expect more than 45 laps at a reasonable speed. The mixture will handle a leaner tune but lap times get slower as laps go up.

Finally

Adding a smidge of IPB and xylene will get the laps up with a minimum of trouble and set you up for the 2-stop finals. Just a warning, adding the aromatics means much leaner tunes are possible but the chance of an engine burn-up also increases. Remember to use some detergent, such as Lubrizol, in the fuel to combat the smoky deposits that come with xylene and IPB.

We have also discovered that extra power can be obtained without the loss of to many laps and with no effect on restarting by the substitution of a equal volume of a 50/50 mixture of ethanol and methanol in the place of just ethanol. This mixture can be

used in the heats, and for the final one can elect to go back to a ethanol only fuel.

The simplest modification we twigged too was to add a new Nelson “Hotter” plug to replace the HD plug in this Ethanol fuel combination. The significant improvement in RPM and the disappearance of the cold running misfire in the first few laps made this simple modification more than worthwhile, however the jury is still out on the plug life using a hotter plug, and it pays to change them out for a fresh plug before any important race.

Development continues, and good luck with your range fuel mixes, I have included my archived database of fuel performance below, (Table 3). I hope this article goes some way to helping you in your quest for the best range/speed fuel for Classic B.

Lance Smith, AUS62894

References and fuel publications

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- Effects of Water in Fuel* by [Brian Hampton](#), Internet Article 2006
- Race Fuel- Tipping the Can*; Ray Hall. Turbocharging, [www.turbofast.com.au /Racefuel19.html](http://www.turbofast.com.au/Racefuel19.html), July 2006
- Race Fuel- Basic Characteristics*; Ibid. www.turbofast.com.au
- Trevor Henderson’s Fuel Formulation*; Pers. comm.

Table 3 Selected database of Classic B fuel performance

Fuel Components	Experimental Ethanol Fuels									
	Extra range modified	Faster extra range	Faster extra range II	Simple extra range	Improved Simple extra speed & range	Simple extra speed & range Mk2	ISES Mk2 with lower oil	ISES Mk2 with range	ISES Mk 3 medium range compon ents	ISES Mk 4 medium range with power
Number	10	11	12	13	14	15	16	17	18	19
Castor Oil	19.5%	19.5%	19.5%	19.5%	19.5%	19.5%	17.5	17.5	17.85	17.85
MilITec	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5	0.5	0.5	0.5
Lubrizol D52									0.15	0.15
Xylene	7.5%	7.5%	7.5%					5	2.5	2.5
IsoPropylBenzine, IPB	7.5%	7.5%	7.5%					5	2.5	2.5
Propylene Oxide		10.0%			6.0%	10.0%	10	10	10	10
DTME			10.0%							
Isopropyl Alcohol										
Nitromethane	20.0%	20.0%	20.0%	20%	20.0%	20.0%	20	20	20	20
Methanol 100%										23.5
Ethanol 98%/2%MeOH	45.0%	35.0%	35.0%	60%	54.0%	50.0%	52	42	46.5	23
NitroBenzine										
Total	100.0%	100.0%	100.0%	100%	100.0%	100.0%	100.0	100.0	100.00	100.0
COMMENTS	53-55 laps at 17.2/7	48 laps 16.5/7	Nasty running, hard to tune	53-55 laps runs cool, 16.9/7 v good starts star performer	Brodak 25, 47 laps at 16.5 and still easy to start, engine sounds great	Brodak doing 16.3 for 46 laps, Prop Bolly cut down 8.5x6 (7.5 x 6)	Changed prop to Bolly 8.5x6 cut down to 7.5x6 43-44 laps @ 16.3-16.4/7	Bolly 7.5x6 16.7.7 for 52-53 laps starting well	Good range fuel with excellent starting, 16.3/7 and 53 laps.	Good range excellent starting and good power 16.05/7 and 48 laps

PROVISIONAL SLOW RAT RULES

The following will be in place for 2008 Muncie Nats

(Note: changes from the current Slow Rat rules are in **bold face**. Check the table for engine size and lines requirements.)

CONTROL LINE SLOW RAT RACING

1. Applicability. All rules from the Unified Control Line Racing rules apply to this event except as modified, appended, or specified herein.

2. Model Specifications.

The maximum length of the exhaust system as measured along its centerline from the face of the piston shall be 1.1 inches.

Pressure fuel systems are not allowed with the exception that the fuel tank vent tubes may be directed into the airstream. **The engine must have a fixed size (non-adjustable) choke area venturi. Engines equipped with factory type RC throttles or carburetors must have the variable intake portion of the carburetor locked in position throughout the flight.**

Models must be of the profile fuselage type, and must conform to the general profile definition. The models must have a minimum fuselage length of **22 inches** when measured from the propeller thrust washer face to the leading edge of the movable elevator surface.

The minimum wing area shall be 300 square inches. The wing must have a minimum thickness of one (1) inch when measured at any point along the span, with the exception of the last two (2) inches before each wing tip.

All models must have a canopy, horizontal stabilizer, elevator and vertical fin.

The entire fuel tank must be located ahead of the leading edge of the wing, **with no surface nor edge more than 1/8th inch inboard of the centerline of the engine crankshaft.**

All models must have a fixed landing gear with a minimum of one (1) wheel, and must be capable of unassisted ROG takeoff. Hand launching is permitted only when it is the Contest Director's opinion that the flying site will not permit a safe ROG.

3. Races.

3.1 Each contestant shall be allowed at least two qualifying heats of 70 laps in length with at least one (1) required Pit Stop.

3.2 Final races shall be 140 laps in length with at least three (3) required Pit Stops.

3.3 **Wherever possible all races will be run with three fliers. Races with less than three will be considered only as exceptions based on the number of entries.**

4. Field Layout.

1. The Inner Circle shall be 68 foot radius.
2. The Outer Circle shall be 76 foot radius.

Max. Cu. In. Engine Displacement (C.C.)	Max. Model Weight	Line Length	Required Minimum Diameter of Each Line		Pull Test
.2599 (4.2)	2.5 lbs.	59'6" – 60'6"	Solid .016	Braided .018	35 lbs.

RESULTS: South Jersey Aeromodelers

Site: Middlesex, NJ November 4, 2007

Phil Valente, CD / Phil Valente reporting

CLOWN RACING (9 entries) 7 ½ minutes

1st.	Walt Gifford	OS 18	173 laps
2nd.	John Ross	OS 18	168 laps
3rd.	Jim Gall	Fora 15	164 laps
4th.	Brian Silversmith	OS 18	161 laps
5th.	George Connors	OS 18	151 laps
6th	Tom Schaffer	OS18	150 laps
7th	Al Ferraro	OS18	143 laps
8th	Phil Valente	MDS 18	109 laps
9th	Pete Sofko	Scratch	

2 Ounce Big Goodyear (8 entries)

140 lap feature 0 pits

1st.	Walt Gifford	K & B 40	7:05:12
2nd.	Tom Schaffer	K & B 40	7:08:74
3rd.	Jim Gall	K & B 40	7:18:96
4th.	John Ross	Super Tiger 36	7:35:18
5th.	Brian Silversmith	K & 40	7:42:60
6th	Pete Sofko	K & B 40	8:31:67
7th	Phil Valente	Super Tiger 36	65 laps
8th	George Connors		48 laps

QUICKIE RAT (1 entry)

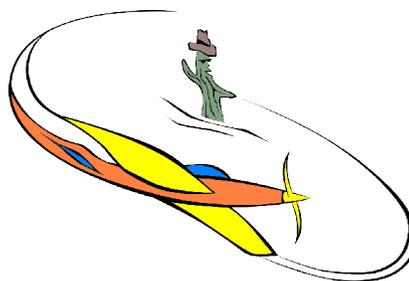
1.	Brian Silversmith	8:25:35
2.	Al Ferraro	scratch
3.	Phil Valente	scratch

The Central Arizona Control Line Club

PRESENTS

CABIN FEVER 2008

With lots of help from the Cholla Choppers and others.....



DATE: April 4, 5, 6, 2008

PILOT'S MEETING: 8:00 AM Sat & Sun

LOCATION: Cholla Choppers Flying Field, Christopher Columbus Park,
Silverbell Road, Tucson Arizona*

FEES: \$20.00 Entry (includes first event, and fuel fee) \$5.00 each additional event
Contest Director Ken Gulliford (623) 877-8823 **Asst CD** Mark Smith (623) 877-8968

SATURDAY EVENTS

FAI F2C (Self Governed)
NCLRA Super Slow Rat (SSR)
Mouse I (Modified Production Reed Valve)
Mouse II (Spring Starters - Any Fuel)
NCLRA F2CN (External Controls Waived)
NCLRA Super Slow Rat (SSR)
NCLRA .25 Slow Rat (Provisional)
B-Team Race
Southwest Sport Speed .35 (Time Permitting)

AMA RULES: (313) Mouse I, (314) Mouse II, (318) F2C, (311) Rat Race (.15)
NCLRA RULES: Clown, Fox, SSR, Texas Quickie Rat, B-Team Race, .25 Slow Rat, F2CN
SCAR / ACLA RULES: Formula Unlimited
CACLC RULES: Southwest Sport Speed .35

Contact Ken Gulliford for Rules Questions (623) 877-8823 or kgrtr@cox.net

RULES DEVIATIONS and Special Instructions:

Mouse I - Modified Production Reed Valve Engines Only

Mouse II - Spring Starter and Any Fuel Allowed

.25 Slow Rat - Engines up to .2599 ci (4.2 cc) (Run as event 312 - See NCLRA Slow Rat Rules Website below)

NCLRA F2CN - External controls requirement is waived

.35 Southwest Sport Speed - Rules at controlline.org

AMA Website: <http://www.modelaircraft.org/events/rulebooks/CL%20Racing.pdf>

NCLRA Website: <http://www.nclra.org/Rules/> **Slow Rat:**

<http://www.nclra.org/Rules/SlowRat/index.html>

Central Arizona Control Line Club Website: <http://www.controlline.org>

* All Day Needle Day - Open Flying on Friday, April 4th, for Earlybirds and those that need practice. No club officials will be present. Courtesy Rules are in effect, along with all Club, NCLRA, and AMA Safety Rules. Enjoy!

NATIONAL RECORDS

SLOW RAT

Jr (70 Laps)	5:16.20	Scott Matson	7/10/00
(140 Laps)	6:47.37	Scott Matson	7/10/00
Sr (70 Laps)	4:29.63	Howell Pugh	7/20/94
(140 Laps)	10:58.47	Doug Short	7/10/00
Op (70 Laps)	2:36.31	Bob Oge	7/18/91
(140 Laps)	5:24.94	Mike Greb	7/19/90

½ A MOUSE 1

Jr (50 Laps)	2:37.57	Scott Matson	7/15/99
(100 Laps)	5:17.68	Scott Matson	7/17/99
Sr (50 Laps)	2:44.68	Dave Rolley Jr	7/15/99
(100 Laps)	5:20.11	D.J. Parr	7/16/98
Op (50 Laps)	2:12.3	Jim Holland	7/16/04
(100 Laps)	4:22	Ryan&Gibeault	7/15/99

½ A MOUSE 2

Op (70 Laps)	3:01.24	MacCarthy/Kerr	7/11/03
(140 Laps)	7:16.03	Whitney/Hallas	7/11/03

SCALE RACING

Jr (70 Laps)	2:50.65	Bob Fogg III	7/16/91
(140 Laps)	6:08.55	Bob Fogg III	6/23/92
Sr (70 Laps)	3:15.12	Doug Short	7/11/00
(140 Laps)	5:40.05	Bob Fogg III	7/11/95
Op (70 Laps)	2:39.38	Willoughby/Oge	7/15/97
(140 Laps)	5:33.04	Bob Fogg Sr	7/16/91

F2C TEAM RACING

Op (100 Laps)	3:15.46	Lambert/Fluker	9/04/05
(200 Laps)	6:57.36	Lambert/Ballard	7/15/98

F2CN (NCLRA RULES)

100 Laps	4:23.10	Bill Lee/Jim Ricketts	7/09/07
200 Laps	10:37.8	R. Whitney/D.Hallas	7/11/05

'B' TEAM RACING

Op (35 Laps)	1:24.34	Burke/Duly	7/12/05
(70 Laps)	3:11.51	Burke/Duly	7/12/05
(35+70 Laps)	4:35.85	Burke/Duly	7/12/05
(140 Laps)	6:45.1	Burke/Duly	7/13/04

RAT RACING (.15 RULE)

Op (70 Laps)	2:44.6	Jim Holland	7/15/04
(140 Laps)	5:33.1	Jim Holland	7/15/04
Jr- Sr No record established			

NCLRA FOX

Jr (100 Laps)	5:57.11	Scott Matson	7/11/99
Sr (100 Laps)	5:28.09	Scott Matson	7/16/02
Op (100 Laps)	5:32.55	Tim Stone/Bob Oge	7/10/05

NCLRA CLOWN

Op (15 Min.) 331 Laps			
	Ron Duly/JohnMcCollum/Russ Green		7/12/06
Op (7 ½ Min.) 160 Laps			
	Don Burke/Ron Duly		7/13/05

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)	3:04.28	Jim Holland/Bill Cave	
			7/14/05
(140 Laps)	6:07.01	John McCollum/Bill Lee	
			7/14/05

NCLRA SUPER SLOW RAT

(100 Laps)	6:27.59	Don Burke/Ron Duly	7/10/05
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CONTEST CALENDAR

NOTE! Confirm all contest details with Contest Director! NCLRA cannot be held responsible for errors or omissions! This calendar is compiled from data collected at the NCLRA website nclra.org. Members can log in there and submit contest details. All contest information must first be posted to the web site.

NORTHWEST DISTRICT

NONE

SOUTHWEST DISTRICT

Jan 1st- Aer o Nuts fun fly small bore proto

Contact Randy Bush \$5 donation for the AerONuts general fund 510- 533- 7134/rbush88@juno.com

FEB 16- 17- - Van Nuyes, CA (AA) Denny Shauer

Memorial Site: Sepulveda Basin. Events:

Saturday: F2C, F2CN

Sunday: AMA Mouse 1 (Cox Engine), NCLRA Clown, NCLRA S/S Rat, SCAR GY, NCLRA B-Team Race

Sponsor: SCAR #4641. CD: Darrell Albert, 572

Begonia St., Econdido, CA 92027. Phone: 760- 741- 2505(day) E-Mail: SCAR4641@AOL.COM WebSite:

<http://www.miroair.info/SCAR>

APR 04- 06- - Tucson, AZ (AA) Cabin Fever Site:

Christopher Columbus Park. Events:

Friday: Possible money event(details later);

Saturday: F2C, F2CN, .35 Sport Speed (As Time

Permits), Mouse I (Modified Production Reed Valve),

Mouse II (Spring Starters - Any Fuel), .25 Slow Rat

(Provisional), Super Slow Rat (SSR), B-Team Race;

Sunday: .35 Sport Speed (If not flown on Saturday), F2C/N Make-Up, NCLRA Clown Race, SCAR/ACLA Formula Unlimited, Rat, Texas Quickie Rat
Sponsor: CACLC #4116. CD: Ken Gulliford, . . E-Mail: kgrtr@cox.net WebSite: <http://www.controlline.org/>
(More details later)

APR 19- 20- - El Monte, CA (AA) Bill Nusz Memorial. Site: Whittier Narrows. Events: Sun: Mouse I(Cox Engines Only), SCAR GY, NCLRA S/S Rat, NCLRA Clown, NCLRA TQR. Sponsor: SCAR #4641. CD: Darrell Albert, 572 Begonia St., Escondido, CA 92027. Phone: 760- 741- 2505(day) E-Mail: SCAR4641@AOL.COM WebSite: <http://microair.info/SCAR/> Note: Mouse I is Cox Engines only.

JUN 15- 16- - El Monte, CA (AA) 2nd Annual Bev & Bill Wisniewski Memorial. Site: Whittier Narrows. Events:
Saturday - Racing: F2C, F2CN
Sunday - Racing: Mouse I(JS)(O), Cox engines only; NCLRA Clown, NCLRA TQR, NCLRA B-TR, AMA Scale Race Sponsor: SCAR #4641. CD: Darrell Albert, 572 Begonia St., Escondido, CA 92027. Phone: 760- 741- 2505(day) E-Mail: SCAR4641@AOL.COM WebSite: <http://www.miroair.info/SCAR> Mouse I will have separate (JS) and (O) categories, all others will be combined.

SEP 20- 21- - El Monte, CA (AA) 3rd Annual Wayne Trivin Memorial
Site: Whittier Narrows. Events: Sat/Sun: Speed, all classes as % of record
.Racing - Sat: NCLRA F2CN, F2C
Racing - Sun: Mouse I(JS)(O) Cox engines only, SCAR GY(JS)(O), NCLRA Clown, NCLRA S/S Rat, NCLRA TQR, SCAR Orange Crate
Sponsor: SCAR #4641. CD: Darrell Albert, 572 Begonia St., Escondido, CA 92027. Phone: 760- 741- 2505(day) E-Mail: SCAR4641@AOL.CO WebSite: <http://www.MICROAIR.INFO/SCAR> Mouse I: Cox Engines only, JS SCAR GY Engine Plain Bearing 15 and Fox 15BB Engines

OCT 18- 19- - El Monte, CA (AA) 22nd Annual Virgil Wilbur Memorial
Site: Whittier Narrows. Events:
Sat/Sun: Speed, all classes as % of record.
Racing - Sat: Mouse I(JS)(O) Cox engines only, AMA Scale Race, SCAR Formula Unlimited, NCLRA S/S Rat
Racing - Sun: NCLRA Clown, NCLRA B-Team Race, SCAR GY(JS)(O), NCLRA TQR
Sponsor: SCAR #4641. CD: Darrell Albert, 572 Begonia St., Escondido, CA 92027. Phone: 760- 741- 2505(day) E-Mail: SCAR4641@AOL.CO WebSite: <http://www.MICROAIR.INFO/SCAR> Mouse I: Cox Engines only, JS SCAR GY Engine Plain Bearing 15 and Fox 15BB Engines

DEC 06- 07- - El Monte, CA (AA) 19th Annual Toys for Tots
Site: Whittier Narrows. Events:
Racing - Sat: NCLRA F2CN, F2C
Racing - Sun: Mouse I(JS)(O) Cox engines only, NCLRA S/S Rat, NCLRA Clown, NCLRA TQR
Sponsor: SCAR #4641. CD: Darrell Albert, 572 Begonia St., Escondido, CA 92027. Phone: 760- 741- 2505(day) E-Mail: SCAR4641@AOL.CO WebSite: <http://www.MICROAIR.INFO/SCAR>

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NONE

MIDWEST DISTRICT
NONE

NORTHEAST DISTRICT
NONE

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NONE

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AMA or Other National Organization #_____

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Bennett, CO 80102

(Membership Expiration date on mailing label)

Payment can be by check or Money order to the address above.

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Torque Roll is the official publication of the NCLRA. Published bi-monthly. All submissions are valuable & will be considered for publication subject to editing. Preferred format for publication is as a MS Word document using 10 point Times New Roman font. Any photos should be sent as a separate jpeg file, medium res. Email all as an attachment to Tim Stone 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.

Apply for membership by mailing annual dues of \$20.00 to the Secretary/Treasurer at the address on this page. Make checks out to the order of "NCLRA" and be sure to provide the correct address for receiving the newsletter.

USING PAYPAL-To pay dues with PayPal, first log in to your Paypal account, then send dues to; Treasurer@NCLRA.org

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<http://www.NCLRA.org/>



Merry Christmas - 2007