

# STUNT NEWS

AMP A says Goodbye  
to two more of its Best:  
Addie Naccarato  
and Bill Wisniewski



[www.control-line.org](http://www.control-line.org)



Also, VSC-19 Report Inside

\$5.00  
MAY/JUNE 2007





Kaz Minato and his Humongous, VSC 19. Photo by Rickiii Pyatt.



Australia's Jeff Reeves with his Palmer Thunderbird. Photo by Rickiii Pyatt.



Rene' Berger's Palmer Pow Wow at VSC 19. Photo by Dave Russum.



Kaz Minato's Humongous in a Wingover at VSC 19. Photo by David Russum.

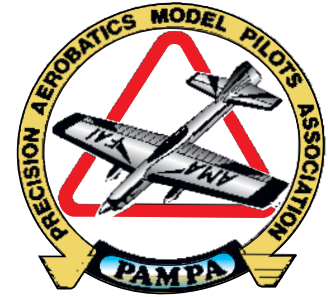
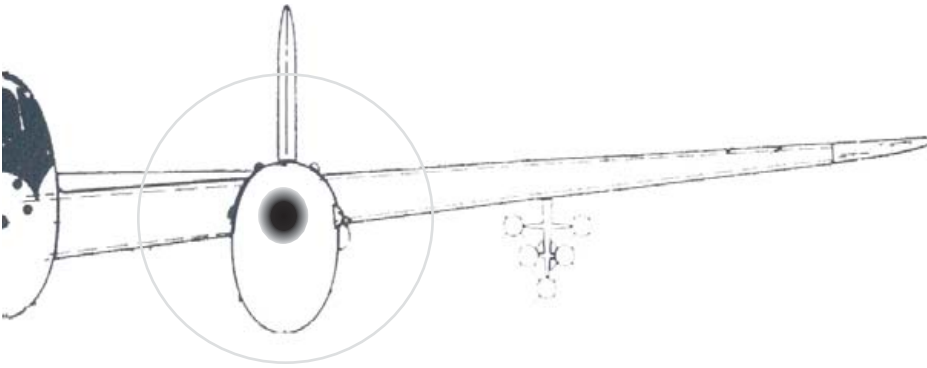


Masuro Hiki's Super StuntMaster at VSC 19. Photo by Dave Russum.



Igor Panchenko's Classic Stunt Ship at VSC 19. Photo by Tom McClain.





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**Cover:** Keith Trostle and Charley Reeves with their Big Jobs at the VSC-19, Photo by Ricki Pyatt. This photo exemplifies the True Spirit of the Vintage Stunt Championships.

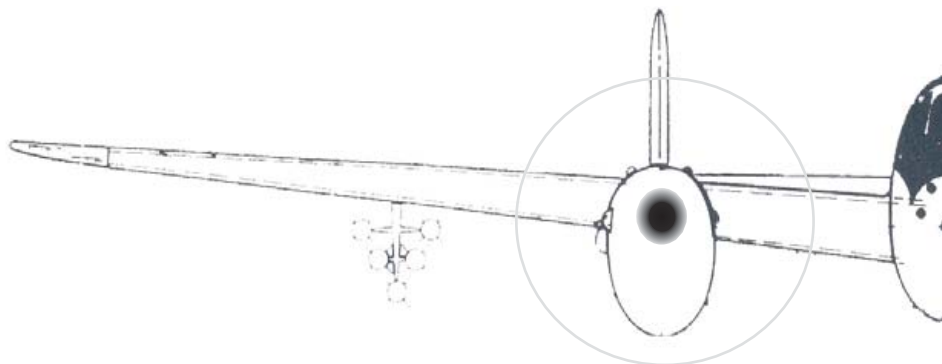
**Centerfold:** 16x20 oil on canvas, titled "Runup at Millville" by Mike Keville, recently accepted for display thru 27 April 2007 at the "Horizons of Flight" exhibit, DFW airport

**Veco Hurricane:** Mark Gerber's Concours Winning Palmer Veco Hurricane at VSC-19, Photo by Dave Russum

**Big Job "Fly OTS":** Charlie Reeves Big Job at VSC-119, Photo by Dave Russum

**Blue Angel:** John Miller's All American Eagle at VSC-19, Photo by Dave Russum





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Mark Gerber's and Bob Palmer's Veco Hurricanes  
nose to nose at VSC 19



PAGE 32  
Doc Holliday with his Fox 29 powered OTS All  
American at VSC 19

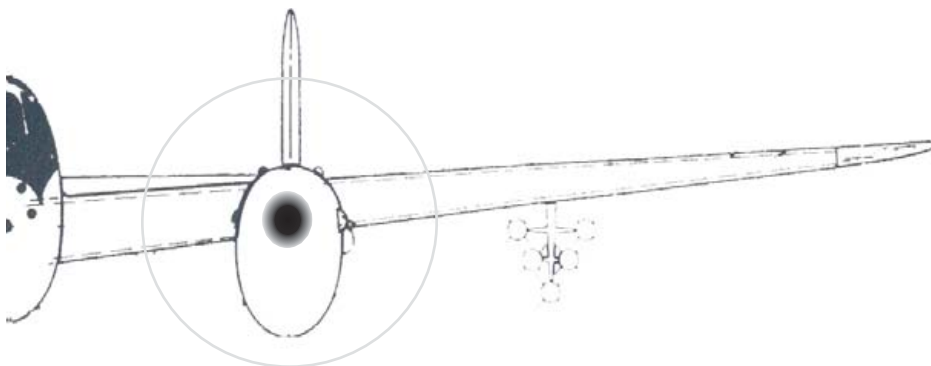


PAGE 34  
2007 Brazilian NATs Team; Thomas Case Jr., Bene Rodrigues,  
and Dr. Thomas Case Sr.

PAGE 2  
Guieseppe Casaroli's electric powered F2B ship







## SPECIAL FEATURED NEWS

**2007 AMA Nationals CLPA  
General Information**  
Warren Tiaht

**2007 AMA Nationals CLPA  
Beginner and Intermediate  
Information**  
Allen Brickhaus

### **2007 AMA Nationals CLPA General Information**

**1.** Please see the Schedule of Events for the dates, times and locations of the 2007 AMA Nationals Control Line Precision Aerobatics events.

**2.** The PAMPA Headquarters hotel will be the Signature Inn. The phone number is (765)284-4200. When making reservations mention the AMA NATs. The rooms will be blocked in the name of AMA.

**3.** Entries for Advanced and Open Class events close at Noon, Sunday, July 8, 2007. Models are to be presented for Appearance Judging at 2:00 PM, Sunday July 8, 2007. Appearance Judging and the pilots meeting will begin at 2:30 PM. Concours voting will take place at the completion of Appearance Judging. Open/

Advanced qualifications will begin at 8:00 AM Wednesday, July 11, 2007. Access to NATs Headquarters may be attained by following the signs around the R/C Scale Aerobatics sites and coming to the NATs Headquarters from the opposite direction than normal.

**4.** The L-Pad, 600'x600' site, the speed circles and racing circles will NOT be open for any control line practice until the completion of the R/C Scale Aerobatics event on Sunday, July 8, 2007. There will be orange cones closing the road to the control line sites on both ends of the road and also at the entry from the hobby shop located just off to the East of the site. Until these cones have been removed by AMA personnel, the control line sites will NOT be available to anyone. Any exception to this policy may be authorized only by Brenda Schuette, Control Line Manager, Warren Tiaht, CLPA Event Director and/or AMA NATs Headquarters. Anyone found to be moving or going around the cones will be subject to disqualification. When the site is opened for CLPA practice, the speed and racing circles may be used for practice if those circles are unoccupied. The Speed and Racing contestants have priority to use the speed and racing circles at all times. Note also that the Southeast portion of the 600'x600' grass area will be used by the CL Combat and will therefore have priority to this area. Carrier contestants will be using the Northeast corner of the 600'x600' square for their competition. Note that the CL Combat competition begins Tuesday, July 10, and

the Carrier competition begins Wednesday, July 11..

**5.** If you qualify for the Junior or Senior categories, you have the option to enter Advanced as well. Junior and Senior entrants do not pay an entry fee but if you do not pre enter by June 24, 2007 you will be charged the late entry fee. Junior and Senior entries close at 4:30 PM, Thursday, July 13, 2006. Please note that the number of trophies for the Junior and Senior events will depend on the number of Junior and Senior pre entries - no pre entries, no trophies. If a Junior or Senior entrant decides to enter Advanced, the Advanced entry fee must be paid.

**6.** If you are of Open age, you may enter only one official CLPA event, Advanced or Open, not both.

**7.** In the Junior, Senior and Open categories, entrants must have built the aircraft with which they will compete. When an entrant signs the official AMA entry blank, that they should be aware that they are attesting to have complied with this requirement and will receive Appearance points. All official event protests will be handled in accordance with the published protest procedure. The Advanced class at the Nationals also has the BOM rule, but an Advanced class entrant may compete with a model he/she did not build by notifying the Head Tabulator, Shareen Fancher, and will forfeit appearance points. The BOM rule will be enforced in accordance with the interpretation shown on the AMA website [www.modelaircraft.org](http://www.modelaircraft.org) on the competition page.

**8.** The qualifying format for the 2007 NATs will be slightly different from that used in 2006. The details are as follows:

**A.** Wednesday and Thursday - Advanced and Open category entrants will fly on the same circles and will be divided equally into four groups in each category and seeded in an attempt to make the circles as equal as possible. The Advanced and Open entrants will be combined by random draw in





each circle. At the conclusion of the four rounds of qualifying the top five Advanced and Open entrants from each circle will fly on Friday. The sum of the higher score from each circle will determine the Advanced Finalists and the Top 20 Open contestants..

B. Friday - The Advanced Finals will be flown on two circles with the Top 20 Open entrants on the other two circles. The sum of the scores from both flights will determine the top 20 places in Advanced, and the sixth through twentieth places in Open. Two attempts per official flight will be allowed.

C. Saturday - The Junior and Senior events will be flown on one circle using five judges. Both Juniors and Seniors will have three attempts for two official flights, with the higher single flight score determine the Junior and Senior National Champions.

Open Finals - The top five Open qualifiers have four attempts to fly three official flights in front of five or six judges. The sum of the two highest scores will determine the Open National Champion.

Jim Walker Trophy - The Junior, Senior and Open National Champions will have four attempts to fly three official flights in front of five or six judges. The sum of the two highest flight scores (no appearance points) will be used to determine the Walker Trophy winner.

D. Any ties that occur will be resolved by using the highest single flight score to determine the final placing.

E. The contest may be interrupted or the start delayed if the wind is continuously stronger than 20.1 mph (9 meters/sec) measured 6.5 ft (2 meters) above ground at the flight line for at least one minute.

9. The following procedure shall be used as a courtesy to fellow entrants and to prevent unnecessary delays:

If an entrant wants to pass rather than fly a given flight, he/she must notify the Event Director

before it is time to pull test the model. In addition, the entrant must also notify the pit boss.

10. Please be advised that ALL entrants in the unofficial events in addition to ALL volunteers, helpers and mechanics MUST register at NATs Headquarters to confirm that you are at the NATs and obtain a name badge. If an entrant is entering only unofficial events, then they must register at NATs Headquarters as a mechanic and pay a \$10 fee to AMA.

The wording that will appear on the entry Blank is: "All participants in unofficial NATs events must be registered with NATs Headquarters as either a NATs competitor or mechanic".

On the AMA Mechanic form the statement reads as follows: "Mechanic: An AMA member participating in any unofficial NATs event or as a non flying helper in any event. A registered contestant is automatically a mechanic". This means that if you are flying in an official NATs event, you need not pay this \$10 fee. The primary reason for this is, that in case of emergency, the AMA know where to find you. Note that this is not the event entry fee, but a registration fee. The unofficial event entry fees are to be paid to that event's ED at registration. YOU MUST REGISTER AT NATs HEADQUARTERS BEFORE YOU REGISTER FOR ANY UNOFFICIAL EVENT.

Junior and Senior entrants will be excused from paying this fee, but must register at NATs Headquarters. NO ENTRANT WILL BE ALLOWED TO COMPETE AT THE NATIONALS WITHOUT AN OFFICIAL NATs NAME BADGE. THIS HAS BEEN ENFORCED FOR THE LAST THREE YEARS. AMA

OFFICIALS INSIST THAT THIS RULE IS FOLLOWED WITHOUT EXCEPTION.

AMA Headquarters hours are 7:00 AM to 5:00 PM.

11. Fidelity points, from 0-20 shall be awarded to Classic Stunt entrants in addition to Appearance points per the PAMPA Classic Stunt rules.

12. The Beginner and Intermediate events do not have a Builder of the Model rule.

13. The earliest time for starting engines and beginning practice flights is 6:30 AM. Anyone beginning earlier is subject to disqualification.

-Warren Tiahrt, AMA CLPA Event Director



I recently had a very involved surgery, but have recovered well. I need some income to cover costs, and I am hoping that my Friends in STUNTLAND, will help me? I have rolled my T&L Rework prices, back to my 1995 prices for this SPECIAL, and will also give multiple engine Rework discounts, as well as Free shipping to all PAMPA members. YOUR SUPPORT WOULD BE SINCERELY APPRECIATED!!! Thanks for your help!! Tom Lay

## T&L "Rework Special"

### "SPECIAL ONLY" PRICING

My Advertising is "Ask anyone who is running a T&L motor, how it runs!"

I have now reworked over 1050 U/C Stunt motors, for PAMPA members and Stunt flyers around the world. I have had Nat's winners in 9 countries, and a World Champion, using my T&L reworked motors, or products.

Super Tigre V.60 & S.T. 51 Rework includes: 1. Re-hone cylinder, 2. Install a hardened "Bowman" piston ring, 3. Upgrade bearings, 4. Install a conventional type Stunt venturi, 5. Make several internal Stunt mods. These motors are very powerful, and have lots of torque, and an excellent 2-4 break! If you supply the motor it is \$75. Nats Winner  
Super Tigre G21/46 & G21/40 Rework includes: 1. Re-hone cylinder, 2. Install a hardened "Bowman" piston ring, 3. Upgrade bearings, 4. Install a conventional type Stunt venturi, 5. Make several internal Stunt mods. These motors are very powerful, and have lots of torque, and an excellent 2-4 break! If you supply the motor it is \$75. Nats Winner  
O.S. .35-S Rework includes: 1. Deburr the factory port burrs, with a rubber tip Dremel tool, 2. Then I have the piston Heat treated, (which also expands it slightly), 3. Then I hand-lap the piston to the cylinder using a very mild lapping compound, 4. I install a custom stunt venturi, 5. I install Allen Screws. These motors will 1-flip start, every time! If you supply a NEW motor the cost is \$65 (I won't rework a used .35-S) Classic Winner

(I require full payment with your order). Personal check is OK for P.A.M.P.A. members, payable to TOM LAY, not "The Starving Stunt Guy"! Tom Warden taught me how to wash my paper plates, when times were bad!

Tom Lay, T&L Specialties, Email: thelayster@aol.com Address: Tom Lay, 1441 Paso Real Ave. # 82, Rowland Heights, CA 91748





10/20/06

2007 AMA Nationals  
Control Line Aerobatic Championships  
July 8-14, 2007

## Sunday, July 8

12:00 Noon	Open/ Advanced entries close	NATs Headquarters
2:00 PM	Open/ Advanced Models presented for Appearance Judging and Concours	180 Building
2:30 PM	Open/ Advanced Appearance Judging	180 Building
2:30 PM	Pilots Meeting and Forum	180 Building
4:30 PM	Concours Voting	180 Building

## Monday, July 9

6:30 AM	Control Line Precision Aerobatics Practice	L-Pad & Grass Circles
8:00 AM	Beginner and Intermediate Stunt Registration*	Grass Circles
9:00 AM	Beginner and Intermediate Stunt Pilots Meeting*	Grass Circles
9:30 AM	Beginner and Intermediate Events*	Grass Circles
12:00 Noon	Old Time Stunt and Classic Stunt Registration*	L-Pad Pavilion
7:00PM	Judges Seminar Phase I	Signature Inn

## Tuesday, July 10

6:30 AM	Control Line Precision Aerobatics Practice	L-Pad & Grass Circles
8:00 AM	Judges Seminar Phase II (Flight)	L-Pad Circle 4
8:00 AM	Classic Stunt Appearance Judging*	Grass Circles
9:00 AM	Old Time Stunt and Classic Stunt Pilots Meeting*	Grass Circles
9:30 AM	Old Time Stunt and Classic Stunt Events*	Grass Circles

## Wednesday, July 11

6:30 AM	Control Line Precision Aerobatics Practice	L-Pad & Grass Circles
8:00 AM	Open/ Advanced Qualifications Rounds 1 & 2	L-Pad
6:00 PM	PAMPA Executive Council Meeting	AMA Headquarters 2nd Floor Conference Room
7:00 PM	PAMPA General Membership Meeting	AMA Headquarters 2nd Floor Conference Room

## Thursday, July 12

6:30 AM	Control Line Precision Aerobatics Practice	L-Pad & Grass Circles
8:00 AM	Open/ Advanced Qualifications Rounds 3 & 4	L-Pad

## Friday, July 13

6:30 AM	Control Line Precision Aerobatics Practice	L-Pad & Grass Circles
8:00 AM	Advanced Finals and Open Top 20	L-Pad
4:30 PM	Junior and Senior Entries Close	NATs Headquarters

## Saturday, July 14

7:30 AM	Junior and Senior Processing and Appearance Point Judging	L-Pad Pavilion
8:00 AM	Junior and Senior Events	L-Pad Circle 3
8:00 AM	Open Finals	L-Pad Circle 4
11:30 AM	Walker Trophy Flyoff	L-Pad Circle 4
6:00 PM	PAMPA Cocktail Hour	Horizon Center
7:00 PM	PAMPA/Nats Awards Banquet	Horizon Center

\* Unofficial Event





## 2007 NATs Beginner and Intermediate Information

2007 PAMPA Beginner event flown at the Nationals, July 9, 2007

The PAMPA Beginner event has been moved to Monday, July 9 and will be flown in the most northwest corner of the 600' X 600' grass area located northwest of the "L" pad. Going to the "L" pad and looking directly toward the AMA Headquarters and the AMA Museum, you can visually find our site. Our flying area will be located in that line of sight.

Beginner registration will begin at 8:00 AM and our pilot's meeting will be at 9:00 AM. We will begin flying as soon as we can. You must have been registered at the AMA "Farm House" prior to being allowed to fly on the site. This is a safety and informational rule in place, as the AMA needs to know of where you are so any contact from families at home can be better facilitated. You must be wearing at least a Mechanics or Entrants badge.

Beginner is divided into two age categories. Open pilots will fly together and then Junior and Senior flyers will compete against those age brackets only. Two identical perpetual trophies will be awarded, one to the Junior/Senior winner and the other to the Open winner. The perpetual trophies must stay within the Continental USA. Framed award certificates will be given up to eighth place in each age category.

The New Albany Skyliners and the Peoria Area Wyreflyers will assist in the running of the event that day. Call or email Allen Brickhaus if you can assist in any way during the July 9 event. Generous stunt pilots and friends have donated engines, kits, handles, and sundry items for the pilots to choose after the awarding of the prizes. Any donations would be welcome as they go to the event flyers only. The young pilots are given a choice before the adults get their choice.

Be sure that each pilot has

their AMA card, NATs badge, a safety thong on their handle and their AMA or equivalent number permanently marked on the upper right wing surface, fuselage side or vertical rudder. The markings must be at least one inch high.

Contact Allen W. Brickhaus for assistance or donations at: PO Box 206/321 East Patton Street, Golconda, IL 62938-0206 or abkb801@shawneelink.net or 618-683-76511 Home or 618-841-0089 Cell.

2007 PAMPA Intermediate Event at the Nationals, July 9, 2007

The PAMPA Intermediate event has been moved to Monday, July 9 and will be flown at the north side of the grass area located northwest of the L pad.

Intermediate registration will begin at 7:30 AM and our pilots meeting will be at 8:00 AM. We will begin flying as soon as we can. You must register at the AMA Farm House prior to being allowed to fly at the site. This is a rule for safety and information as the AMA need to know of where you are so any contact from families at home can be better facilitated. You MUST be wearing at least a Mechanics or Entrants badge.

Be sure each pilot has their AMA card, NATs badge, and a safety thong on their handle. The AMA number should be on the upper right wing surface, fuselage side or vertical rudder. The markings must be at least one inch high.

I am looking for volunteers to be flight judges and appearance judges. There will be awards given. Contact Robert Brookins with any questions at:

3825 E 42 Street, Des Moines, IA 50317 or 515-266-5334 or email: Clstunflyer@bobbbrookins.com.

-Allen Brickhaus

## '58 NATs photos courtesy of Don Ogren



Art Pawloski at the 1958 NATs.



Rolland McDonald at the 1958 NATs



Jim Silhavy at the 1958 NATs





## President's Report



**Paul Walker**

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As this hits your mailbox, this is probably the last issue prior to the NATs that you will receive. I hope you have made your reservations for the motel, and sent in your entry fees by now. Don't forget the revised format this year, and please respect the restrictions on our flying until Monday morning. This year, appearance judging is on Sunday afternoon. There will be a pilots meeting during the judging, so bring your questions on how the NATs will be run. That applies to even knowing when the landing maneuver starts!

Now is the time to start getting ready. Practice fly in some bad wind. Practice fly in the calm, and then practice, practice, practice some more. Don't think of the bad wind as just bad luck on your part, and give up. Consider it a challenge, and your chance to shine, and show the judges what you can do. A good flight in the wind will not be forgotten. Go for it, but do remember your planes limitations and try not to place it in that compromising situation. Does it wind up bad in consecutive maneuvers? Move the maneuver so that it doesn't wind up so much. That's what practice will tell you. Where to place the maneuvers, how big to make the maneuvers, and what

speed you should be flying. That bad weather flying in practice will show during the NATs. When were the last NATs that didn't have some sort of bad weather? Don't let that bad weather separate you from the pack. Be prepared and be the leader of that pack. I look forward to the NATs, and hope to see many of you there.

As you will see in much of this Stunt News, VSC has just finished. Unfortunately, I was not able to attend this year. From what I read, it was a lot of fun. The weather appeared to be very warm, and held out for most of the week. It appears that there was some wind that came up on Saturday, and there were a number of passes in the second round of Classic. This year there were even more awards and unique airplanes. To show the level of fun and that winning isn't everything here, note Tom McClain's B-26 and Bob Whitley's P-38 twins for Classic and Old Time respectively. They were made for the pure joy of building and enjoying the plane as opposed to how well they flew. Thanks Mike Keville and the Cholla Choppers for putting on that event. I hope to attend the next VSC as I missed not going this year.

Last month Brett Buck mentioned that the EC has been working on a revision to the by-laws. I want to make it clear here that this is what the membership wanted, not what I wanted. A year and five months ago I asked the EC to canvass their districts to find what they wanted to be worked. Near the top of the list was a by-laws revision. To date, the EC has selected the seven articles that were voted on as needing revision. As Brett said, there is no rush here to get this done. By the time you read this, we should have agreed upon exactly what is in need of change, and be making attempts at re-writing each to fit the requirements already agreed upon. If you have any inputs, please send them to your district representative as soon as possible.

Other than the by-law efforts, not much has been going on with PAMPA governance since the last issue. I know I have been busy getting my taxes done, as well as trying to get a new plane done. I suspect there have been others doing the same thing! The

weather has changed and it is now time to get out and go flying. Hope you get some good flying in this season.

I have always had issues with rubbing and buffing out my planes. It has been done by hand, and that has always limited just how much I was able to do. That has now changed. I read the March, 2007 Model Aviation magazine column, by Phil Granderson, and followed his recommendations. Wow! What a difference. The whole rubbing and polishing process fit into one Saturday, and the results were spectacular. I used slightly different chemicals than he did, but they were made for the same procedures. You have to read this article, as following it can save you a significant amount of time, and result in a much nicer looking plane. This is just another example of the fact that there are no secrets in this event. I am continually amazed at how stunt flyers continue to share what they know. Thanks Phil.

Now, it's time to get flying and get some practice in. Hope to see many of you at the NATs.

-Paul Walker

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## Vice President's Report



### Brett Buck

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#### Sad News

I am sure you all saw the various tributes to Mary Gebhart. I didn't get the news until after I had submitted my previous column.

I think others have described well the fantastic job Mary did for PAMPA. I wanted to add my personal commentary. I've known Bob and Mary since quite literally the entire time I have been competing in stunt. I met them at my very first contest in 1981. Over the years Mary treated me like her little brother. It was like I was a family member.

They were at most of the contests I attended in the Midwest, and later they moved out here and they went to most of the big contests here. When the NATs moved to Muncie, Bob and Mary made the trip every year, and hauled my gear. I wouldn't have attended many of the NATs if it weren't for them.

Unfortunately, I had lost touch with Bob and Mary over the last few years. Just didn't happen to be in the same place at the same time. I figured that it was just circumstances and there was always next time. Now, there isn't.

Mary was a very sweet lady and a good friend. I will miss her.

#### International Representatives?

A group of modelers from the UK, led by Roger Ladds, has proposed that we recognize them as a "district" of PAMPA. The idea would be to provide the same sort of representation that the various AMA districts currently have, for British modelers (about 40ish people).

It's a very interesting idea and in my opinion a quite reasonable request. They pay their dues - much higher than US members to cover the international postage - just like the rest of us.

Of course, there are some issues that have to be worked out first. The most obvious is that our charter is to provide a common voice from the competitors in the running of the US Nationals and Team Trials. But it doesn't say anything about the British NATs or Team Trials.

A second potential issue is that of having foreign trustees for our AMA Special Interest Group (SIG). As far as I can tell there is also nothing technically preventing SIGS from having foreign trustees/leaders. However, I would expect there to be objections if a large fraction of the SIG trustees/leaders were not in the US.

This brings up issue number three-if it makes sense for one country with ~40 people, it makes sense for any other country, or all the countries of PAMPA members. Taken to the logical conclusion, we could wind up with a dozen or more new "districts", skewing the representation towards foreign modelers. The old "snowball" effect.

#### What to do?

So far this proposal has received a fair bit of discussion in the PAMPA forum. I think we have pretty much convinced ourselves that some form of foreign representative plan is a good idea, not in serious conflict with our purpose, and almost allowable under AMA SIG rules.

In short, we are probably going to do something to provide foreign representation.

To keep the scope of the change manageable, we are looking at a relatively small number (3-4) regional "districts" or "at large" representatives that cover the entire

world. Say, one for Western Europe, one for Asia/Australia and one for South America. That probably isn't the right breakdown and I haven't looked at the membership number to see if it's reasonably balanced, but I think you get the idea. Doing it like this would solve the entire issue proactively without a series of changes as the requests come in from various groups.

Of course this will have to be incorporated in the bylaws. This is a good time to address it, since we are already working on some bylaws tweaks (as previously mentioned). Issues like definition of the districts, how to nominate the directors (since most of them won't be at the NATs business meeting), how to ensure the ballots are correctly assigned/validated, general conduct of the elections, are all points to address. None are very complex or tricky so that won't be a hold-up, just another task on the overall re-write.

The topic is completely open for discussion. It's your organization and the EC wants your comments and any alternative ideas or approaches. This is particularly true for the foreign PAMPA members - if you don't like or want what we are discussing, now is the time to speak up. But of course US members can have their say as well. It affects us all.

#### The wheels grind slowly

Overall, the bylaws rewrite is taking a rather deliberate pace. That's partly intentional, and partly a function of EC availability to participate. This means, of course, that the proposal to develop additional directors will not happen in the immediate future.

Until then, if any of our international members has comment, question, issue, etc. to be addressed by the EC, please send it to me. I will be the acting representative for the foreign membership until we work out the details. If anyone has very strong feelings about me not being an appropriate representative, please let me know - it won't hurt my feelings - and we can come up with some other arrangement.

-Brett Buck





## Editor's Report



**Tom McClain**

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Sun City, AZ 85372  
(623) 466-8134  
(623) 374-2736 fax  
tmcclain8@cox.net

Yes, it is a great time to participate in control-line precision aerobatics. Two articles in our features section were provided by Flying Models magazine, courtesy of the publisher, Mr. Harold Carstens.

Mr. Carstens had this to say about Control Line Precision Aerobatics:

"Tom:

Pampa has our permission to reprint the Utasi and Whitely articles from the September 1994 issue of Flying Models. Please credit Flying Models Magazine.

It's good to see this area of the hobby is still active and hanging tough. Too many modelers today don't even know what an X-Acto knife is, no less scratch build a plane, or any kind of model. We'd appreciate a copy when it is released.

Hal Carstens"

They are a lead in to a great article on Uwe Kehnen's recent success with retracts on his F2B ship.

Again we thank Hal Carsten's and Flying Models Magazine for the permission to reprint their two articles.

Sheryl and I have just returned from a wonderful week in Tucson, AZ at the Vintage Stunt Championships (VSC). This was the 19th annual VSC and the 18th hosted by the Tucson

Cholla Choppers. The week was a celebration of friends, model airplanes, nostalgia, the future, and competition. The VSC has unarguably become the largest, most vibrant, best attended, and possibly the most enjoyable control-line stunt contest in the United States and maybe the world.



Even the blind can judge??

There were 98 Classic, 77 Old Time Stunt (OTS), and 12 Ignition Stunt entries at this year's VSC. The weather was excellent from the beginning. We saw sunny skies, moderate winds (except for the last



day of Classic), and temperatures in the 80s (one day was in the low 90s). The flying site was superb. All in all, excellence was the norm, not the exception. The Choppers and

the volunteers kept things running fast and smooth. Everyone got in the spirit and the time went by way too fast.



Before we knew it, we were at the awards banquet where Ted Fancher did his superb rendition of Bob Barker once again.

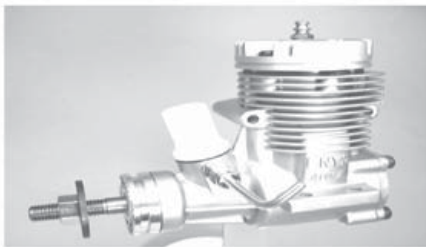
Things that made this VSC the best to date, were the appearance of several first time and unique aircraft. Gordon Delaney and John Miller brought their outstanding renditions of Dave Gierke's All American Eagle. Then to top that off, Tom Lay brought







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the original All American Eagle and we had a great Kodak moment with 3 All American Eagles, Bob Lipscomb's Novi III, and Grady Widener's Novi I. The original All American Eagle was looking rather long in the tooth, but the workmanship was superb.

Allen Brickhaus brought his beautiful Adams' Special and Bob Whitley brought his Paul Plecan 1948 P-38 twin and Chris McMillan brought his newly finished Paul Plecan 1948 F7F Tigercat, another twin.

Mike Keville had instituted a new OTScategory of MostScale OTSentry. Bob Whitley' P-38, Chris McMillan's Tigercat, and Tom McClain's 1948 Walt Musciano Bellanca Flash filled the bill. Thanks Mike for giving us all a chance to emphasize the Spirit of VSC.

The Saturday evening VSC Banquet, at the Marriot, was another celebration of warm friendship, fellowship, reminiscing, and renewing of old acquaintances. It was almost like a New Year's party. Next year it will be at the Tucson Viscount Hotel. The Cholla Choppers have created and sustained, along with Mike Keville, a Mecca of stunt in the VSC. The Choppers, the

volunteers, and the VSC staff are to be congratulated on the "Best Seen to Date." This event truly rivals the AMA Nationals.

Now to address an error that some of us have been experiencing lately. Some of you have received the Mar/Apr 2007 issue of Stunt News with the March/April cover, but with Jan/Feb 2007 content. This is an error committed by the publisher in Arlington, VA. The publisher is replacing all defective copies of Stunt News at no cost to you or PAMPA via First Class mail. If you have received one of these unique Mar/Apr - Jan/Feb 2007 copies, please notify our gracious Secretary/Treasurer, Shareen Fancher, either by email or phone and she will make sure you receive a replacement copy as soon as possible. Sorry for the inconvenience.

Finally, we should take a moment and remember those that have come before and now have left us. We lost two outstanding control-line and AMA members recently, that being Addie Naccarato and Bill Wisniewski. They had tremendous impact and influence on control-line in every way in stunt to speed to mention two venues. They will be



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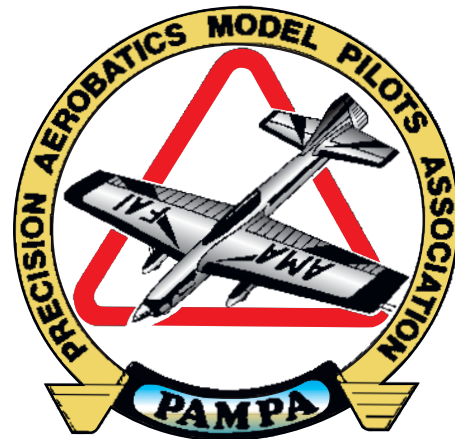
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sorely missed.

In the meantime, ponder these quotes:

"Andantes Fortuna Juvat" and "Victory smiles upon those who anticipate the changes in the character of war, not upon those who wait to adapt themselves after the changes occur." Air Marshal Giulio Douhet

- Tom McClain



## Membership Secretary



**Russ Gifford**

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(563) 259-1649  
gst92@mchsi.com

Continuing from the last issue.

PAMPA is gaining a few new members, mostly from other disciplines of model aviation. In the March 8 edition of "Machine Design" on page 80 is a picture of what appears to be an indoor model. (It would have been better if they'd used a stuntship.) The accompanying article explains that it is the first airplane to be powered by laser. While this doesn't have much to do

with stunt it is this kind of exposure that is needed to improve our image. As much as I hate electric powered stunt, the proliferation of electric park fliers is useful for bringing model building and flying closer to more people than the usual RC park location.

We need to rethink our presentation to the public. Putting a control handle in the hands of a curious onlooker doesn't work to gain new fliers. In spite of the "feel good" there is considerable evidence to point that out. The only venue to possibly work that way is "kid venture" at Oshkosh, and even there the numbers are discouraging. Our image to the public is so poor that many people are hostile to model airplanes and file complaints citing noise. This would be a good place to launch one of those long diatribes about declining social values but that's a complete waste of our time for this venue.

Paul has asked members to explain what it is that makes us want to do this. Some have responded. Most of us don't know and we'll probably never be able to figure it out. We just aren't made that way.

One of the ideas for reaching out in search for more people is to use STUNT NEWS. As I mentioned before, we have a surplus and the idea is to sell them on a newstand basis. There are two concerns. The

first is if it is okay to do so based on the 501c status PAMPA holds as a nonprofit corp. The second is if the membership wants to do it. Although the EC could do this by itself we would appreciate some membership input. Let your district rep know your feelings. I will presume that "no response" is positive, an angry tirade is negative and mixed will be cause for another one of those uncertainty dilemmas.

On a whole different item: The international members need better representation. As long as you are conversing with your district rep on the above, ask him what's up with this.

More next issue

-Russ Gifford

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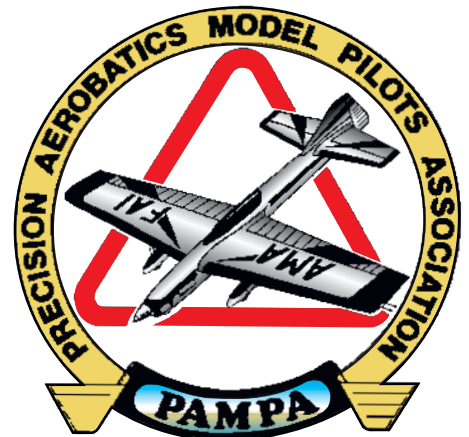
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## District 1 Report

Connecticut, Maine, Massachusetts,  
New Hampshire, Rhode Island, Vermont



Yes, I fly too. My Lightning 2000, ST 60. Published in FM 3 - 2nds & 2 - 3rd places in Expert 1 Beamer, 59 Oz.

**Dave Cook**

2 Elm Drive

Hampton, NH 03842

(603) 926-4176

[dmidgley@welchfluorocarbon.com](mailto:dmidgley@welchfluorocarbon.com)

Well I am back. Dave Midgley had to step down as District I PAMPA Director and Paul asked if I would step in. We thank Dave for his efforts as District I Director. Dave is one of District I's top modelers. His innovations, building and finishing skills are top notch at a national level. He has contributed to and supported model aviation in District I for many years. We hope he finds time to continue some level of participation in competition and, especially, running the Hampton Beach contest.

It will take a bit to get up to speed and I need input from District I - write ups, photos, etc. to keep

up with what's going on in New England.

Guerry Byers has become our main CD over the last few seasons. He does a great job - well organized and runs a great meet. But he needs help - judges, field setup, judges, tabulators, and did I say judges !!! We have some other great CDs - Rick Clark, Bill Hummel and Dick Wolsey. They are the spark plugs that keep us going - they all need help when they run meets.

Guerry is also our new Treasurer/Secretary and he is getting our club records straightened out and organized. He has put out a mailing for updating the club member information. If you have not done so, fill it out and get it back to him,

Rick Campbell has resurrected the Handle Newsletter. It is great and I plan to steal liberally from it for my columns. It is distributed over the internet and we get nothing but good words in feedback. The last newsletter theme was the good old days in New England. If you are not up on the computer, get a friend to print it out for you.

Rick and Steve Yampolski are hard at work promoting a Super 70's Class - "Super 70s is open to models designed, first designed, built and flown between January 1, 1970 and December 31, 1979" - We plan on running Super 70's at meets this year in District I. Full rules to follow.

Steve Yampolsky is the PAMPA webmaster - get on the net and use

the site. Steve has done a great job in setting it up.

Dick Carville has a RSM Mustang underway. Rick Campbell, Bill Hummel and Steve Yampolsky have a joint building project going based on my Lightning design. Will Moore has a new big electric underway also based on the Lightning design.

The North Shore guys have a new flying site - get in touch with Dick Carville for details.

That's all for this issue - send me stuff!!!

- Dave Cook

## DOCTOR DIESEL

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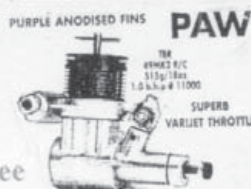
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## District 2 Report

New York, New Jersey



**Windy Urtnowski**

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Rutherford, NJ 07070  
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WindyU@aol.com

Karen and I have had the good fortune over the years of traveling all over the country and visiting many stunt flyers. A few years back, we visited Warren and Ramona Walker in Rancho Cucamonga, CA. What a beautiful home and workshop! Warren hosted other modelers while we were in California, and everyone seemed to have a great time. He even cooked up a great meal and showed us his beautiful motor home. We also got to hang out with Sophie, the Walker family's Springer Spaniel.

This year, Warren, Ramona, and Sophie took a cross-country trip in the motor home and spent a few days here in District II. His original date got pushed back when we got a call from Arizona that the motor home had eaten the fan and radiator for lunch. It all worked out even better, though, and they arrived just in time for the leaves changing to bright orange and yellow. It also meant that they were here for Week 2 of the Palisades Park meet. Warren got to fly the RO-Jett .90 test plane before the meet started and hit it off with our ambassador of goodwill, Dan Banjock. Dan also gave him a traditional "Philly Flyers" hat.

Wear it with pride, Warren—the Philly Flyers usually charge me \$50 each year for my hat. Warren got a glimpse into our local contest scene, and we hope he'll be back in the future...maybe even joining us all at the 2007 Brodak Fly-In.

Among the things that helped Warren and me build a friendship is our love of Reno Air Racers. He's built a Strega and a Red Baron over the years and has helped me with several favors locating hard to find items through his business. I understand he hosts local modelers on Thursday nights at his home and has served as president of the local control line club, the Knights of the Round Circle.

Let me make a prediction for the future: Warren will build another Reno Air Racer, and I wouldn't be surprised if it had a RO-Jett .90 for power. We've even made some tentative plans to attend the Reno Air Races in 2007. Anyone interested in joining us?

Dan Banjock showed us a sneak preview of his next project, a semi-scale aerobatic ship powered by a turbine! I'm sure Dan will make a show stopper out of it, following in the footsteps of his awesome Vista. His Dyna-Jet MiG was the highlight at last year's Brodak Fly-In until Mike Palko set it on fire. Great video—what a show! Dan got an ovation from the crowd every time he flew it.

During the last cycle I've been completely consumed with a major house renovation, new kitchen,

and closets. I apologize for any calls I've missed, but for now I have to focus on completing this project before the flying season starts. Your patience and understanding are most appreciated.

-Windy Urtnowski



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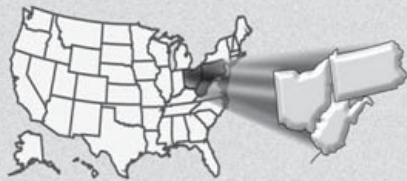
Control Line Spoken Here





## District 3 Report

Ohio, Pennsylvania, West Virginia



**Patrick Rowan**

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Email: [patr131@yahoo.com](mailto:patr131@yahoo.com)

District 3 is showing signs of spring! I saw 3 Robins today. We had a heat wave. It went up to 55 degrees. It's time to go flying.

I've rounded up some information on District 3 contest for 2007.

-June 11-15, Brodak Flyin at Carmicles, PA. CDs are Allen Brickhaus & Tom Hampshire. This is a big contest with each class having as many as 30-40 people flying. Flying officials & practice goes from 8am till dark all 5 days. Also building & finishing seminars each evening. Unlimited fun. There are 6 circles. 1 paved, 3 with paved take off areas & 2 grass.

-July 28&29 Skylarks of Sharon Profile Stunt Contest & Fun Fly. Transfer, PA. CD Bob Crusan. 2 grass circles.

-Philadelphia, PA Stunt Contest. No date set yet.

-August 25&26 Western PA Stunt Championships. Transfer, PA. CD Phil Spillman. 2 grass circles.

-Sept. 22&23 Cleveland Area Stunt Championships. Berea, OH. CD Dave Heinzman. 3 grass circles.

-Sept. 29&30 Capital City Championships Stunt Contest. Columbus, OH. CD Keith Bryant.

It's held at Cooper Stadium & has almost unlimited circles for practice in the paved parking lot.

-Oct. 6&7 West Ohio CL Stunt Contest. Dayton, OH. CD John Jorden. Has 2 paved circles in a nice park setting.

It's been building season in



John Sunderland's Chevelle at Cleveland, OH contest 2004.



Dick Hodge with his Sukiol, LA .46, Cleveland 2006.



Dalton Hamet's Quetzal, ST. 40 Piped in Cleveland 2006.



Dave Heinzman's Satona, LA .46 in finish stage. Heinzman photo.



Dave Heinzman's Tempest, PA .51 piped, Cleveland 2006.







Paul Lutz Brodak 38 Special kit bashed into a Acro Sport. Lutz photo.



Ron Lutz Bonzo Classic Stunter. It has only a few flights on it. Lutz photo.



Another shot of Ron's neat looking Classic Bonzo. Lutz photo.



Ron Lutz has been busy in his shop this year. Here is his refinished ARF Cardinal. Lutz photo.

### District 3.

Dave Heinzman is in the finishing stage with his new Satona, LA.46. Sumner Forest has a Smoothie built & almost ready for trimming. Roger Strickler has been on a rebuilding winter. An All American Sr, Humbug & a Ringmaster. John Cocking is building a Reinhart International OTS. Keith Bryant has a ST .60 powered original PA ship framed

up. Rumor has it Joe Reinhart is working on a new Classic plane. His out west trip might be delaying it a bit. Ray Kidner has a Gieseke Nobler he's working on. Ron Lutz refinished his ARF Cardinal. He's building a Cavalier & a Stega .40. Paul Lutz, Ron's son, is finishing up a Brodak 38 Special kit bashed into an Acro Sport. I'm still working on my Destroyer .46, a Humongous, a Nobler & a Pat Johnson P-51 D Mustang. For some reason I can't work on just 1 plane at a time.

Till next time,

Fly Stunt

-Patrick Rowan



Alan Buck's ARC Cardinal LA .46 at the Western PA Stunt Championship contest. Transfer, PA.



## District 4 Report

Delaware, Washington, D.C.,  
Maryland, N. Carolina, Virginia



**Bill Little**

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Aberdeen, NC 28315-2538  
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wlittleiii@nc.rr.com

Well, it's about time for us to enter another Contest Season! As I write this in March, we have experienced a very early Spring. Temps have already reached into the low 80's! I am sure there are many that have constructed new planes for the upcoming flying season. I hope all are totally successful in their endeavors.

I have included the latest word from the NVCL club (thanks guys!):

Northern Virginia Control Line,  
AMA Charter #308

Jan/Feb 2007 Newsletter

The Voice of Control Line  
for Northern Virginia [www.northernvirginiacontrolline.org](http://www.northernvirginiacontrolline.org)

New Slate of NVCL Officers  
Elected

Dick Houser and his team finished up their 2 year terms of office this year. We thank them for their service and for keeping the club growing and on course. The 2007-2009 slate of NVCL officers are as follows:

President	Scott Richlen
Vice President	Dick Houser
Treasurer	John Lindberg
Secretary	Frank Dobrydney

NVCL Christmas Party was a Success Good cheer and a most excellent variety of Yankee Swap

gifts this year at the annual Christmas Party.

Winter building sessions to begin Saturday, 6 January 2007. Come join your fellow NVCL members at Henry Werner's warehouse between 9AM and 1 PM and get started on that winter building project.

President Dick Houser announced at the annual Christmas Party that John Lindberg has been chosen as the recipient of the 2006 NVCL Legion of Merit for his diligent work as club Vice President.

The following pictures are from The Norfolk crowd:



Willis Swindell's Arf Strega

The first meet I will be able to make looks like the June Meet in Huntersville. I hope to see all of you there! I also plan on being at the NATs in Muncie at least until Wednesday of the week. I am looking forward to seeing old friends and meeting new ones this year!

As always, send me any news of District 4 happenings, I will respond that I have received your correspondence.



John Tate with the Mike Garmon designed "Hot Pants", an OS 40FP powered take off on the "Fancy Pants".



"Monstermobile"! 830 sq. in. powered by an OS 65LA:



The "Line UP"!



Willis with his ARF Strega, powered by a K&B 61:

Until then, may all your landings be 40 pointers!

- Bill Little





## District 5 Report

Alabama, Florida, Georgia, Mississippi,  
Puerto Rico, South Carolina, Tennessee



**Dale Barry**  
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Once again there are no District 5 contests to report on, and while I try not to venture outside our district, this month I'll make an exception. For the first time I was able to make it to the VSC in Tucson. He probably doesn't want to hear it, but many thanks go to Bob Shaw for making it possible.

Since I drove to the last NATs held in Washington state I'm no stranger to long trips, but if you've never driven across Texas you can't really appreciate how BIG it really is! I left on Friday the 9th at 3AM and drove to Mike Scott's house, he lives about 45min. south of Dallas. That was the first fourteen hours. We got up and left at 3:15AM the next morning and got to Tucson at 6:30PM. Even starting near Dallas it still took 11 hrs. to get to New Mexico, and the last 300 miles had 80 mph speed limits, which I was more than happy to use.

The weather, in a word, was awesome! The days started at 53-55degrees and 86 to 93 degrees through the week. The wind was light all week until Saturday, but even then it was still manageable. The Cholla Choppers have two paved circles and three grass circles, and with the exception of some prairie dog holes, the grass



Randy Smith and Ronnie Farmer at the VSC

was low-cut flyable even with wheel pants.

There were a total of five District 5 members flying in the two events, four in OTS and four in Classic. Also, Randy Smith and Ronnie Farmer showed up just to hang out. Roy Trantham, Chuck Feldman, Ty Marcucci and myself flew Old Time, with Roy, Ty, me and Gene Martine flying Classic.

I finished 5th in OTS and 9th in Classic flying a new Humongous and Gene finished 7th in Classic flying a nice Mackey Lark.

Except for 4000 plus miles of driving it was a incredible adventure and I hope to get to repeat it someday. Next issue I should have some local stuff to report. Next week is the KOI and in mid-May we'll have the Marietta



Gene Martine with his Lark







District5 OTS flyers



Chuck Feldman with his Jamison

contest, held the week-end after Mothers Day. 'Til next time I'll leave you with a few photos.

-Dale Barry



Roy Trantham with his DS54 powered Humongous



Ty Marcucci with his Ringmaster





## District 6 Report

Illinois, Indiana, Kentucky, Missouri



**Allen Brickhaus**

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John's daughter, Grace, is advancing in the PAMPA ranks with some flight experience in the Chicago area.

The shots taken and presented this issue are from the Chicago based Treetown contest, the Broken Arrow at St. Louis, the Carolina Criterium and two from the Ice-O-Lated in St. Louis. I will allow the captions to speak for themselves.



Owen Richards, a native of Ellenton, Florida, takes the hot months and travels north to stay near relatives and enjoy the milder climes of the Midwest during the summer months. Here Owen is seen at Aurora Airport west of Chicago during the Labor Day weekend.



Michael Schmitt does not have to travel quite as far, but Gurnee, Illinois is not a hop, skip and a jump from the southwest corner of the Chicago area event.



Bob Brookins was captured at the St. Louis based Lafayette Esquadrielle Broken Arrow contest in late September of 2006.



John Paris drove from the Michigan area to attend the Chicago event.



Columnist Allen flew his TEOSAWKI and his Envoy VI at the Treetown contest.



District VII PAMPA Director, Crist Rigotti, graces us with his presence at the Broken Arrow in southwest St. Louis, MO. His weapon of choice for OTS was a Jamison Special.





Dan McEntee of Florissant, MO has a well-executed Shark 45 with ST 51 for power. Dan regularly flies and practices at Buder Park.



Steve Fitton and his Tom Dixon designed Time Machine enter Expert at the Carolina Criterium in Huntersville, NC in the late October skies.



Randy Smith is showing off his new "in-house" pipes at the Huntersville contest.



Even the nose paint is outstanding on Bob "Sparky" Storick's Ares as seen at the Broken Arrow in the fall of 2006.



Gary Lutz and his shiny Spitfire stunter powered by an ST 60 makes the trek to Huntersville in late October of 2006.



Gary Hajek brings his finished, but as yet un-flown, Bob Hunt designed Saturn to the Ice-O-Lated. The new Saturn is powered by a PA .51 on muffler and weighs to this point, 47 ounces. Keep Gary busy while I secretly load the model in my van.



Such nice pilot produced trophies cover the award table at Buder Park after the competition is done and the honors are handed out. Many modelers spent much time building these unique and valued prizes.



A brave bunch of guys showed up to fly the Ice-O-Lated at Buder Park on the last weekend of February. Bob Arata and the Lafayette Esquadriille do a wonderful job of hosting the late winter event in southwest St. Louis.

-Allen Brickhaus





## District 7 Report

Iowa, Michigan, Minnesota, Wisconsin



**Crist Rigotti**  
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Well, the flying season is finally upon us. As I write this column it is late March and the weather looks like its getting better. I hope your winter project is done by now and that you have had a chance to try it out. Remember to take your time with a new plane. With the new flying season and all, we're a bit out of our routine and that's when things can go wrong. Go through your flight box and clean it out and take an inventory. You'll be amazed at what you'll find in there. I found some things that I haven't needed since I crashed my 2 RD-1's when I was flying beginner. No wonder that thing was getting heavy!

I didn't get a lot of feedback this time around, but I'll use what you send me. When you send me pictures, remember that digital is the way to go and please use the maximum pixel count when taking pictures. This will result in nice clean and crisp photos of your creation in an upcoming issue of Stunt News. Email is fine and is most convenient.

Let's cover the contests in the area for the next couple of months.

The Mid-Iowa Control Liners are having their Spring Kick-Off contest May 5-6 in Polk City, Iowa. The events will be P.40, OTS, Classic on Saturday, and PAMPA classes on Sunday. Each event will have multiple classes. Call Bob at 515.255.8025 for more information.

Michael Schmitt is the CD for the "Windy City Classic" held Sunday May 27th. Please note that the contest is Sunday this year. All the PAMPA classes will be flown along with Basic Flight at the Ned Brown Woods site. Call Mike at 847.543.1216.

Pete Mick of the Milwaukee Circle Masters will CD their stunt contest on June 10. The contest will be at Wagner Park in Pewaukee, Wisconsin. PAMPA classes will be flown. Call Pete at 262.377.6137 for details.

The 25th annual Sig contest is scheduled for June 23 and 24 in Montezuma, Iowa. That's no typo, 25th annual! Saturday will feature Old Time Stunt, Classic, and P.40 events. Classic stunt includes the Banshee, Chipmunk, Super Chipmunk, Twister, Mustang Stunter, and SIG Akrobat. Sunday will feature all the PAMPA classes. Mike Gretz is the CD and can be reached at 641.623.5154. Pre-registration is encouraged. Did I mention a free picnic for all registered pilots? Don't miss this one. It'll be special being the 25th annual event.

Glenn Petersen is building a SV-11 that will be powered by a T&L ST 51. Looks good Glenn. Getting close to the "finishing wars". Keep us posted and we expect to see it on the contest circuit.

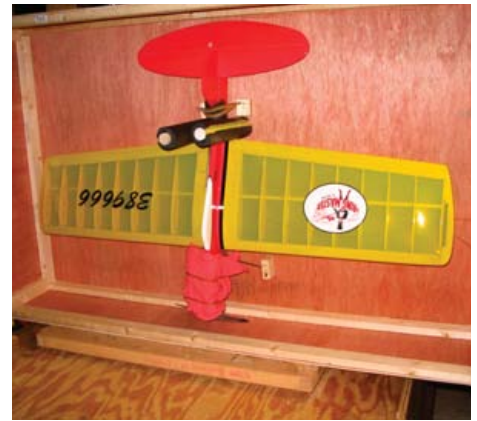
John Paris sent me a picture of his Ringmaster boxed up for its trip to this years VSC. Nice job on the plane and the travel box too.

Bob MacDonald won the Spirit of '64 and the Best I-Beam Stunter awards at VSC this year with his beautiful Strathmoor stunter. Way to go Bob. Hope to see it at Sig this year.

-Crist Rigotti



Glenn Petersen sent me this photo of his SV-11 that will be powered by a Tom Lay ST 51. I can attest to Tom's ST 51 mods. Good choice Glenn. Petersen photo.



John Paris is planning on going to VSC in this picture. Paris photo.



Jim Morway poses with his Super Clown and John's Ringmaster back in Michigan. Compare the difference in weather with Michigan and Tucson in March! Paris photo.



Keith Sandburg and Wayne Willey at VSC. Brickhaus photo.



John Paris at VSC with his Ringmaster. Brickhaus photo.





Jim Morway with his colorful Super Clown at VSC. Brickhaus photo.



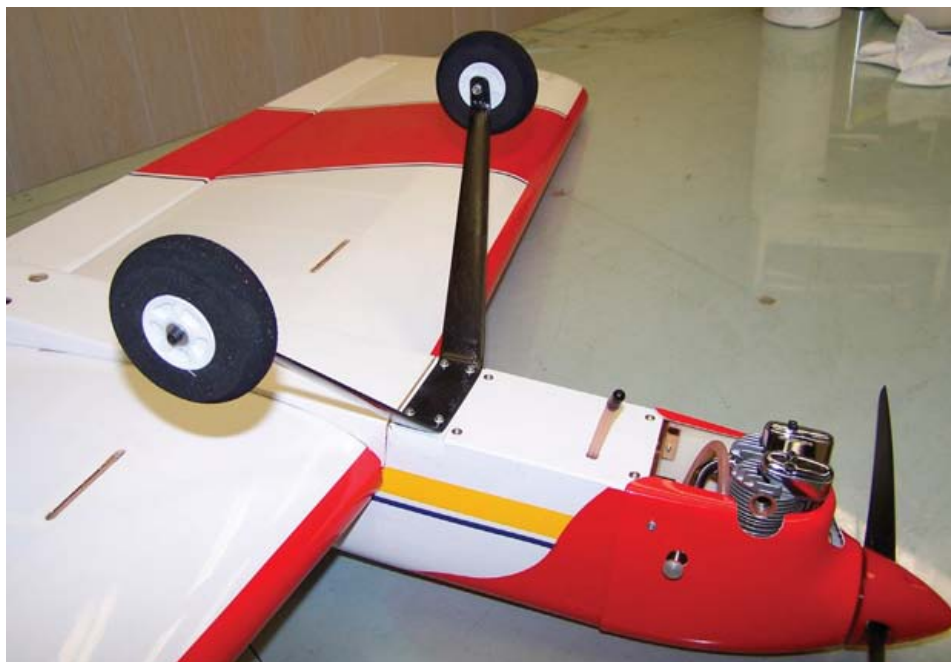
My newest stunner for this year. A 600 square inch original design powered by a PA75. Weight at this point is 58.7 ounces.



A close up of the bottom of the airplane.



The PA75 engine installation. I hope to use a metal tank in the future.



My Top Flight Score with a Saito 56 and carbon fiber gear.



I picked up this vacuum pump at a local swap meet. I plan on using it to bag my wing skins on a foam wing.



Bob MacDonald with his Strathmoor stunner at VSC. Brickhaus photo.



I'll end on this one. My OK 60 ignition engine. One day I'll get her running.





## District 8 Report

Arkansas, Louisiana, New Mexico,  
Oklahoma, Texas



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Well it's that time again. Time sure does fly fast, it seems as though it was only last week I was sitting down and writing the report for March/April issue. Must be all of the Honey Dos that have taken so much time I almost lost track of the deadline. Well looks like I am going to make it just in the nick of time.

Dee Rice sent some photos of the Dallas not Presidents Day contest and Elwyn Aud sent some of the NE Oklahoma clan having some fun in the white stuff. Of course down here on the Gulf Coast the only time we see anything white on the ground is when someone drops their ice cream. Must have been a bit nippy up there in Tulsa.

VSC has come and gone and thanks to Linda Gleason and David Russum I have some photos to include in the article.

District 8 was well represented this year as in years past with the following District 8 members in attendance: Stan and Mary Haugarth, Dale and Rylene McCord, Darrell Harvin, Jim Thomerson, Bob Lipscomb, Gaylord and Lance Elling, Mike and Priscella Scott, Dick Byron, Don and Flora Hutchinson, Dale and Linda Gleason, Phil Dunlap, Bill and Sandra Lee, De and Ruby Hill, Joe and Colleen Gilbert, Riley and Marion Wooten, Charlie and

Kay Bruce, and Sean McEntee.

Rather than fill up the pages of this issues report with a lot of words I thought that pictures could tell it best. You know the old saying "a picture is worth a thousand words"

Well until next time.. Tight lines and fair winds.

-John Hill



Mr. Trophy Joe Gilbert.



District 8 clan during appearance judging. Fine looking group.



District 8 members taking home the hardware.



Frank McMillan launching Richard Oliver's new stunt ship The Dragon Lady.



The Support Team the lovely wives of District 8.





Frank McMillan's number 8 Caudron in level flight getting ready for a practice session. This is number 8 in a long line of highly competitive airplanes.



Richard Oliver's Dragon Lady in inverted flight. This is the best airplane that Richard has had his hands on. It sure looks good in the air.



"Batman" Bill Rutherford with his highly modified Impact called VaVoom.



Ryan Young, current Junior National Champ, getting ready for some practice and coaching.



Frank McMillan's Ring Master at 24oz. Getting ready for the Ring Master contest to be held at Scobee field in April.



The Beginner Senior division was represented by Amir Saleh, Pat Gibson, Ryan McElroy and Rudra Mithal at the not Presidents Day contest in Dallas.



Army Top Gun, Sean McEntee won two firsts in Advanced and flies the Predator Drone during his day job.



Frank Williams Slot Machine in the wing over. This airplane is based on the Trivial Pursuit and is powered by a PA75.







Darryl McComb, from Corpus Christi Texas, Getting ready for his P40 flight in Dallas. That is Larry Oakley checking out the canopy attachment on Darryl's P51 profile.



Dave Ek's Mallard Drake. Hummm, I have never seen a duck fly inverted before. Guess there is the first time for everything.



There were 23 entries in P40 at the Dallas contest.



Joe Gilbert and Leo Thiel firing up the ST60 in Joe's ARF Strega. Probably had to use a blow torch to get enough head in the old ST60 to get it going.



Elwyn sent this picture of Morton M-5 running. Wow, now where is that Yak54 I had?



Elwyn Aud out for a little late winter fun in the snow.



De Hill, Larry Scarinzi and Charlie Bruce catching up on old times at the TGD annual Collecto.



Bill Wilson launches Tom Farmer's Magnum .36 powered ForeRunner. Inboard engine and tank.

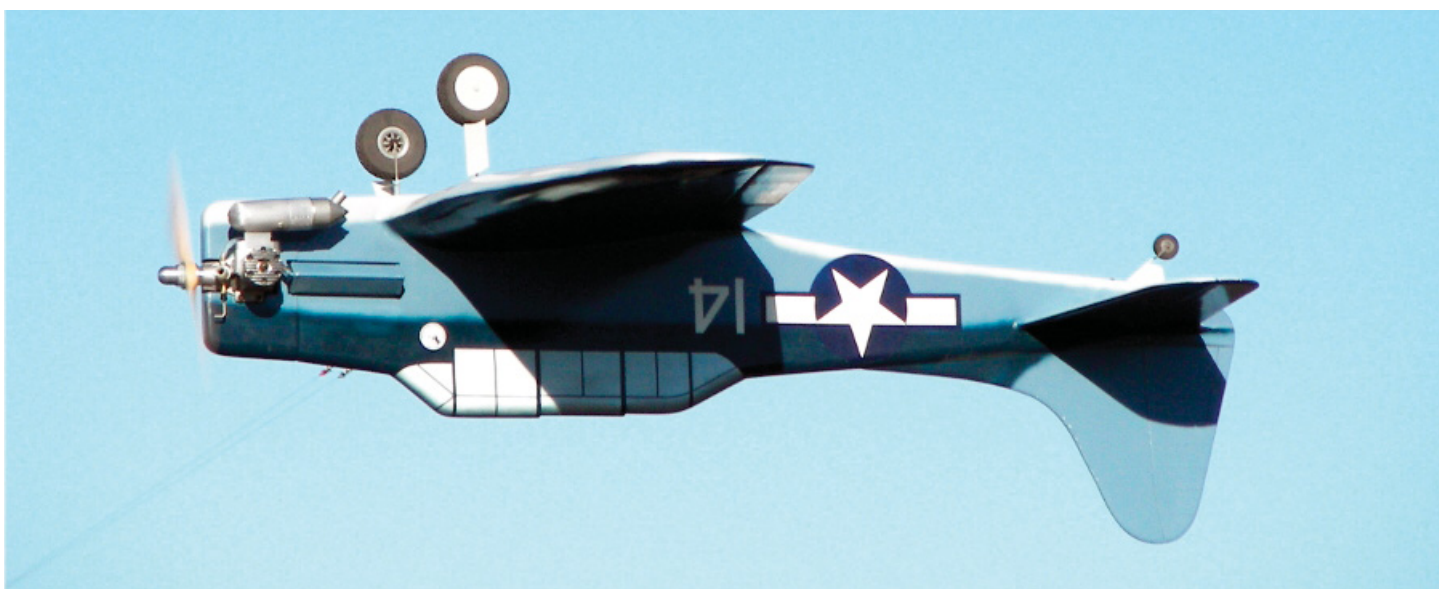


Norm Faith, from El Dorado Ark., enjoys flying his new ST51 powered Score.





David Rice launches Expert winner Larry Oakley's Valedictorian.



Don Hutchinson's SBD Dauntless could have been Pilots Choice had there been one. Not only does it look good, it really is a fine performer.



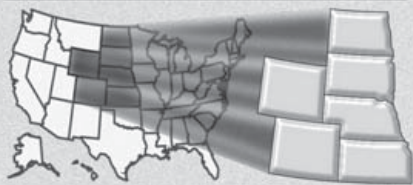
Steve Wolfe won Beginner Open and we expect him to move up fast.





## District 9 Report

Colorado, Kansas, Nebraska, North Dakota,  
South Dakota, Wyoming



**Carl Shoup**

3172 Glendarm Dr.

Grand Junction, CO 81504-6034

(970) 434-0906

shoupentstatorrepair@prodigy.net

Hello, I missed VSC this year because of work. I received two letters for this issue one from Mark Gerber and one from Linda Brainard.

### The first letter is from Mark Gerber.

"Here are some pictures. It's scratchbuilt with no changes from the kit. ST .46 power. 46.5 ounces. Silkspan and Brodak dope finish. I made the Veco Hurricane decal for this plane and as you know I already had the Veco and AMA ones. Veco wheels and spinner. The first flight was Monday of last week in Tucson. After I added about 3/4 oz of tail weight it flies very well I think you'll remember that Bill Heyworth has one of the two Hurricane's that Bob Palmer built. Bob Palmer brought it to VSC 3 or 5 years ago. He helped me take the photo with Bob Palmer's Hurricane. We shot it at sunset during the party at Bill's house last Monday evening."

- Mark Gerber



Mark Gerber and Bob Palmer's Hurricanes



Mark Gerber's Hurricane.



Mark Gerber's Hurricane.

### From a Wife's Perspective by Linda Brainard

"When Chris asked me to go with him to VSC for the first time in 2003, I immediately thought it would be a great way to visit my aging folks in Boulder City, NV on an annual basis. So why not! My idea of fun is not sitting around watching a bunch of guys fly toy airplanes attached to lines, going around in circles while trying to make some basic geometric maneuvers. What is so hard about planting a circle on top of a circle? So I decided I needed something to do. It's too boring just to sit here and watch these guys plant shapes in their vertical eights, or make slanted egg shapes out of their triangles. Don't get me wrong, there were some flyers out there that had some great moves (airplane maneuvers).

I volunteered - and was put to work running score sheets for the O.T. event. I had a blast joking with the judges. One thing led to another and pretty soon they are showing me the

mistakes the fliers were making. Hey, I could become a judge at our home contest! I could critique my husband and tell him he really needs to work on those squares and square eights, among a few other things. The people are so friendly and easy to talk with; of course there was only one subject; Airplanes. It's a good thing I paid close attention to my husband when he was telling me, in minute details, on how he was using the New Millennium Construction while building his Jamison. Because, when another flyer asked me what engine my husband was running I was able to reply, a modified Tower 40. And I can tell you his secrets, because he told me step by step when he modified it!

This year I graduated from runner to Pit BOSS for the O.T. event. I had so much fun calling the flyers up to the pit. In fact one guy said he liked being called, that he wouldn't mind if I even called him off the circle. I didn't want to get fired on my first day on the job so I held my tongue and didn't call him off the circle. Oh, but I wanted to!

Going out to dinner at the homes of different members of the Cholla Choppers was a great homey feeling of sitting around the table eating good food and spending time with the people you enjoy being with. And the conversations moved beyond just Airplanes. Of course those conversations were with some of the wives I got to meet.

I think I'll go back next year and see if they can use any of my

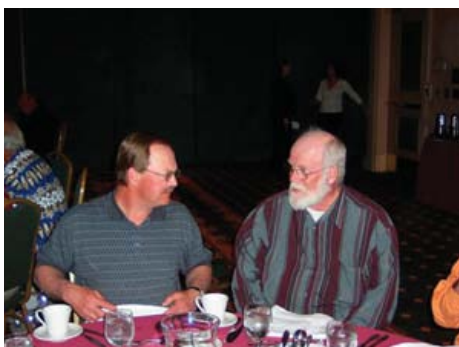




Allen Brickhaus and Tom Chambers



Mr. and Mrs. Gilbert and Chris and Linda Brainard



Chris Brainard and Doc Holiday



Rusty Brown and Jerry Chambers

expertise."

By: Linda Brainard

These photos are from VSC banquet. Mark Gerber won Classic Pilot's Choice with his Hurricane and Jim Kraft won Ignition.

I would like to thank Mark, Chris and Linda for their photos and input. I think that the only people in District 9 are from Colorado, but I know that is not true. I need input from the whole District so I can keep this column interesting.

- Carl Shoup

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## District 10 Report

Arizona, California, Hawaii, Nevada, Utah



**David Fitzgerald**

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Napa, CA 94558-2001

(707) 259-0626

[DavidLFitzgerald@sbcglobal.net](mailto:DavidLFitzgerald@sbcglobal.net)

**H**ello to all. It's deep in building season as I write this, except maybe on the west coast where there isn't really a building season. You see, last week it was in the 80's. I got out flying 3 days last week and will again this Thursday. So, some of you spend the winter building (electric Impacts anyone?), some of us in the west prefer to fly, or as maybe the real case—just too lazy to build a new plane. I just find it hard to sit down and think I'm going to improve over what I've got right now, ok so it's 8ish going on 9ish and 1700 flights. I'm almost afraid to build

something new, because as we all know; they never fly the same twice. No matter how well we build or are accurate, no two planes seem to ever fly the same—good or bad. The 75 is running so well, I just don't mess with it much. When it got cold, meaning less than 60F, the PA 61 would get a bit punchy and come on hard in the square 8, the 75 just doesn't do that, anywhere, or any temperature. If it took me 9 years to get the last one right, I'd hate to take that long getting a new machine to work. Besides, my honey-do list is almost done. After we finished the house last year, I've finally gotten to the point that if you flip a light switch, the light actually comes on instead of another unrelated thingy going off. I even crawled under the house to plug holes in the foundation today, which just put off this column another few hours. Basketball, T-Ball, Little League, Tae-Kwon-Do, Swimming, Dance, Gymnastics....you get the idea.

Now, I've succeeded in spending the last paragraph making some people not happy, because of the CA weather, or my plane; but what I am really trying to hide is the fact that I have absolutely nothing to write about. I have no pictures. Not even from the great SW and Tucson area. I can't even prevail on Jim Aron again to bail me out of a lack of material. Thanks for the ARF article Jim. Someone please write and tell me what they think of ARF only contests?

Along those lines, I am feeling a bit abandoned though. Jim Aron is deliriously happy with his new Rho-Jett; Jim Tichy is flying a Rho-Jet, as are Ted and Brett. This may be the start of a trend. Each setup is a clone of Brett's, except Jim Aron's, who keeps messing with it. As Brett tells Jim Aron, "...you just won't listen, and you feel you are going to improve on perfection exactly how?" Sorry Jim, but I can't argue much with Brett's logic. (Incoming)

This leaves Paul Pomposo and I as the few remaining bastions, in the west, of PA-hood. Not that I wouldn't mind trying a Rho-Jett, but I really don't have the time to try to improve on Brett's set up on my own....So who is the current NATs Champ anyway??

By the time you read this the NW Regionals, end of May, should be about to or is just now happening and is usually a soggy event that is fun for all. I should have some more material for the next issue, and maybe some pictures.

If I've stretched this sorry excuse for my column long enough, I think I'll save the rest of my allotted space for the included VSC report.

Sincerely,

-Dave Fitzgerald

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## District 11 Report

Alaska, Idaho, Montana, Oregon,  
Washington



**Bruce Hunt**

2237 Joseph St S  
Salem, OR 97302  
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bhunt@subell.net

It's spring again in the Northwest. And the year has started in the usual fashion with a series of Fun Flies. February 11 the Eugene Prop Spinners hosted the first Fun Fly. It was a cold day with a light gale just to make things interesting, but the dozen or so hardy pilots made their flights anyway. As is the custom, Floyd Carter brought out one of his unique models. This time it was a high aspect ratio, dihedral profile that Floyd built back when the dinosaurs roamed the earth. With its long wing turned up to the wind I was sure we would have an exciting flight, but amazingly enough Floyd turned in one of the surest flights of the day. Just as a point of contrast, Mike Hazel then put in a couple flights with "Mr. Stubby", its name based on the extremely low aspect ratio wing. Also putting in flights was Mike Denlis, the president of the Eugene Prop Spinners, with his Fox .29 powered Skyray. John Thompson brought out his new Ares but passed on trying to put in trim flights in the wind. John did manage a flight on last year's Vector 40 while we all watched and prayed for a safe landing. John reported that the Eugene modelers have been flying almost every weekend at their Eugene Airport site. And, of course, I should have been there last week when the weather was perfect. This is starting to remind me of the couple of years I lived

in Anchorage when I first heard a native tell a visitor, "You should have been here last year. The weather was perfect." Then the second year I over heard the same comment, "You should have been here last year." But I had been there and it was just as bad then. I guess you develop a short memory for bad weather. What they say about fishing also applies to flying, "Any day flying is a good day."

The second Fun fly was held March 10 in Salem at the Bill Riegel Model Airpark. There was a good turn out of a dozen or so pilots. Gerald Schamp was flying his model with a good reliable ST60 that sounded better than the

with a gallon of fuel and the intention to use it on many days to come.

The last in the series of Spring Fun Flies is scheduled for Sunday, April 1 at DeAlton-Bibbee Field at the Evergreen Aviation Museum in McMinnville, Oregon. This should be the best of the lot. You can as always get a complete report with pictures and color at the Northwest's premiere website: [flyinglines.org](http://flyinglines.org) where you will find everything about Northwest flying and events along with your favorite commentary from some of the best people you'll ever meet.

-Bruce Hunt



A hardy group of fliers show up at the Eugene "Fun Fly". You can tell it is cold by their chattering smiles. From the left Omar Nelson, Tom Kopriva, Jim Corbett, Mike Hazel, Bruce Hunt, Floyd Carter, Mike Denlis. Floyd's 1962 profile sits in the foreground.

Double Star 60 he was flying last year. Jerry Eichten brought a couple of his kid's models and flew the Profile P-40. Pat Johnston gave his son at last year's Northwest Regional contest. For my part, I have been working with a young man, Zachary Davis, building models for the past couple of years and we used the day to fly his 1/2A trainer and make the maiden flights on his brand new Twister. After a few warm-up flights with his 1/2A, Zachary made a couple of very confident flights on the Twister. Back in the pits, Gerald Schamp was giving show and tell with his brand new ROJett 75 and 90. We're talking serious heavy metal on the 90. It will be interesting to see what models develop around these new engines. With the weather threatening to turn wet, the flying day ended with the customary drawing for a few prizes provided by the host Club, Western Oregon control-Line Fliers (WOLF). Zachary walked away



Zachary Davis shows off his Twister. Zach flew the Twister for the first time at the Salem Fun Fly. His first comments were that it was much easier to fly than the 1/2A trainer. Always true in with 10 mph gusts.







Jerry Eichten holds his daughter's new model. Maybe we'll get to see her in beginner competition soon.



Ron Claus of Kent, Washington, made this Thunderbird II for this year's VSC. Ron has made a good come back to stunt flying in a couple contests with ARF's. Assuming the Thunderbird survives the winds of Tuscon, we should see more of Ron this year.



Bruce Hunt starts Zachary Davis' twister for its maiden flight.



Zachary confidently pilots his model on his first solo with a 40 sized model.



Don McClave has upgraded his models to sport an LA40. Here's his 2007 entry, a Southwick Skylark.



Another view of Don McClave's new power package. The LA40 should give Don a lot more interesting choices of Classic Models. You can read more about Don's setup at <http://flyinglines.org>



# PAMPA NEWS



PAMPA's EC has been meeting the first quarter of this year. The first item that was worked was the decision on which articles of the by-laws needed revision. After

a full discussion with time for everyone to get their inputs in, the vote on these was taken. As you can see by the vote, it was clear which ones needed revision, and which ones didn't. The summary of those votes follows:

In March, Dave Midgley due to very limited free time decided it was best for his district for him to step aside, and find a replacement that could spend time on PAMPA business. Dave Cook stepped forward and volunteered, and the EC quickly vote for his acceptance.

After quite a bit of time attempting to discuss the 8 articles that need revision, it was put forward to form a committee to draft up a proposal. That committee will be Dave Cook (Chairman), Tom McClain, and Russ Gifford. The EC approved this move. It should be noted here that originally Russ Gifford voted the lone No. He was concerned about the Foreign issue, and didn't think we had worked it hard enough. He was then asked to join the committee to "fix" that concern, and he

readily agreed.

Curt Nixon contacted me with the information that we are out of the classic plans publication, and it needed replenishing. He was approved \$2800 to reprint that publication, and fill the outstanding orders.

The last item worked came from our advertising editor. He became confused as to who got free ads, who didn't, and what the "rules" were. That was simple: There weren't any. As a result, Howard drafted up a set of rules. These were reviewed and discussed before a vote was taken.

The summary of the votes for these issues follows:

The EC will reconvene when the committee reports with their first draft.

Submitted by Paul Walker

EC Member	Article												
	1	2	3	4	5	6	7	8	9	10	11	12	13
President Paul Walker	Y												
Vice President Brett Buck	Y	N	Y	Y	N	Y	Y	Y	Y	N	N	Y	N
Sec. / Treas. Shareen Fancher	Y	N	Y	Y	N	Y	Y	Y	Y	N	N	Y	N
District 1 Dave Midgley	Y	N	Y	Y	N	Y	Y	Y	Y	N	N	N	N
District 2 Windy Urtnowski													
District 3 Patrick Rowan	N	N	Y	Y	N	Y	Y	Y	Y	N	N	Y	N
District 4 Bill Little	Y												
District 5 Dale Barry	N	N	Y	Y	N	Y	Y	Y	Y	N	N	Y	N
District 6 Allen Brickhaus	N	N	Y				Y	Y	Y	N	N	Y	N
District 7 Crist Rigotti	Y	N	Y	Y	N	Y	Y	Y	Y	N	N	Y	N
District 8 John Hill	N	N	Y	Y	N	Y	Y	Y	Y	N	N	Y	N
District 9 Carl Shoup	N	N	Y	Y	N	Y	Y	Y	Y	N	N	Y	N
District 10 David Fitzgerald	N	N	Y	Y	N	Y	Y	Y	Y	N	N	Y	N
District 11 Bruce Hunt	N	N	Y	Y	N	N	Y	Y	Y	N	N	Y	N
Newsletter Editor Tom McClain	Y	N	Y	Y	N	Y	Y	Y	Y	N	N	Y	N
Membership Sec. Russ Gifford	Y	N	Y	Y	N	Y	Y	Y	Y	N	N	Y	N

Yes	8	0	13	12	0	11	13	13	13	0	0	12	0
No	7	13	0	0	12	1	0	0	0	13	13	1	13



EC Member	March 07 EC meeting results			
	Dave Cook	Committee for BL rewrite	Funds for Classic Plans for Curt Nixon	Advertising Rules
President Paul Walker	Y	Y	Y	Y
Vice President Brett Buck	Y	Y	Y	N
Sec. / Treas. Shareen Fancher	Y	Y	N	Y
District 1 Dave Cook		Y	Y	N
District 2 Windy Urtnowski	Y	Y	Y	Y
District 3 Patrick Rowan	Y	Y	Y	Y
District 4 Bill Little	Y	Y	Y	Y
District 5 Dale Barry	Y	Y	Y	Y
District 6 Allen Brickhaus	Y	Y	Y	Y
District 7 Crist Rigotti	Y	Y	Y	N
District 8 John Hill	Y	Y	Y	Y
District 9 Carl Shoup	Y	Y	Y	Y
District 10 David Fitzgerald	Y	Y	Y	N
District 11 Bruce Hunt	Y	Y	N	Y
Newsletter Editor Tom McClain	Y	Y	Y	Y
Membership Sec. Russ Gifford	Y	Y	Y	N

<b>Yes</b>	15	16	14	11
<b>No</b>	0	0	2	5

Pass

Pass

Pass

Pass





## CONTEST CALENDAR



**Howard Rush**  
14321 SE 63rd St.  
Bellevue, WA 98006  
(425) 746-5997  
hmrush@comcast.net



**Jim Snelson**  
7200 Montgomery Blvd NE #287  
Albuquerque, NM 87109  
(505) 296-2884  
jandjhobbies@msn.com



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the premier control line  
aerobatics magazine.**

## Stunt News Contest Calendar

Listings are what we had at the Stunt News deadline. For up-to-date listings and additional information, see the PAMPA Web site: <http://www.control-line.org/DesktopDefault.aspx?tabid=24> and the AMA Web site: <http://modelaircraft.org/comp/ContestCalendar/Webcalendar/Flying%20Events/calendar.htm>. Be sure to confirm with the CD before going to a contest. Submit new listings to Howard Rush, hmrush@comcast.net, or Jim Snelson, jandjhobbies@msn.com. See <http://www.control-linecentral.com/Calendar.asp> for links to contests outside North America. Submit contest ads to Howard Rush.

Events marked with an asterisk use nonstandard rules. Contact CD for details.

### 2007 Contests:

#### May 5-6

Mid Iowa Controlliners Spring Kick-Off, Big Creek State Park, Polk City, IA

Saturday: Old Time (all skill levels combined), Classic (Beginner and Intermediate combined, Advanced and Expert combined), P-40\* (Beginner and Intermediate combined, Advanced and Expert combined)

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Bob Baldus, 6719 Colby Ave., Des Moines, IA 50311-1610, (515) 255-8025, bstudeman@aol.com

#### May 5-6

Texarkana Spring Classic, Spring Lake Park, Texarkana, TX South on Summerhill Rd from I-30, then E on Mall Dr to the end of the road.

Saturday: P-40\* (Beginner, Intermediate, Advanced, Expert)

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Norm Faith, 157 W Lake Rd, El Dorado, AR 71730-9502, (870) 310-3525, genavser@arkansas.net

#### May 6

Valley Circle Burners' May Meet and Stunt Clinic, Apollo 11 Field, Sepulveda Basin, Van Nuys, CA Turn south off Victory Blvd across the tracks and past the first access road on the right. Continue on to a road that goes off at a Y on the right.

P-40 Sportsman\* (Beginner and Intermediate combined), P-40 Competitor\* (Advanced and Expert combined),

Classic (Beginner and Intermediate combined, Advanced and Expert combined)

CD: Lee Strickland, 7650 Kraft Ave, No Hollywood CA 91605, (818) 764-2217, leestr@pacbell.net

#### May 13

Garden State Circle Burners' Spring Air Show Profile Meet, George L. Gaydos Field, Two Bridges Rd., Lincoln Park, NJ

Profile Stunt\* (Beginner, Intermediate, Advanced, Expert)

CD: Roy Ward, 19 Hewlett Rd, Towaco NJ 07082, (973) 402-0925, team4ward@aol.com  
<http://www.gsrb.us>

#### May 13

Spring Opener, Niagara Falls, Ontario





Profile Stunt\*, F2B  
<http://www.balsabeavers.ca/>

### **May 18-20**

Cobb County Sky Rebels' Atlanta Stunt Meet  
2006, Lockheed-Martin parking lot, exit 261 from I-75,  
Marietta, GA

Saturday: Profile Stunt\*, Old Time, Nostalgia  
Stunt\*

Sunday: Precision Aerobatics (Beginner,  
Intermediate\*, Advanced\*, Expert\*)

CD: Tom Dixon, 315 Santa Anita Ave, Woodstock,  
GA 30189, (770) 592-3279

Contact: Jim Catevenis, [jcat@bellsouth.net](mailto:jcat@bellsouth.net)

### **May 19**

Strathmoor Annual Spring Contest, Rouge Park,  
Detroit, MI

Old Time, Classic

CD: Marc Warwashana, 11577 North Shore Dr,  
Whitmore Lake, MI 48189, (734) 449-7355

Contact: Paul Smith, (586) 939-1076, [crickballs01@aol.com](mailto:crickballs01@aol.com)

### **May 20**

Garden State Circle Burners' swap meet and trim  
session, Palisades Park swimming pool parking lot,  
275 Broad Ave, Palisades Park, NJ

Contact: Rich Peabody, 393 Fern St., Township of  
Washington, NJ 07676-5013, (201) 664-1929, [rpeabody@verizon.net](mailto:rpeabody@verizon.net)

<http://www.gscb.us>

### **May 25-27**

Northwest Control-Line Regionals, Eugene, OR  
airport

Friday: Classic appearance judging, Old Time

Saturday: Advanced and Expert Precision  
Aerobatics appearance judging, Classic flying, P-40\*,  
Precision Aerobatics (Beginner, Intermediate)

Sunday: Advanced and Expert Precision Aerobatics  
flying

CD: Craig Bartlett, 205 N.E. Cedar Lane, Corvallis,  
OR 97330, [scraigbart@yahoo.com](mailto:scraigbart@yahoo.com)

Alternate contact: John Thompson, 2456 Quince St.,  
Eugene, OR 97405, (541) 689-5553, [JohnT4051@aol.com](mailto:JohnT4051@aol.com)

<http://flyinglines.org/07.regionals.flyer.pdf>

### **May 26**

Topeka Control Line Association Top Class Annual,  
Gage Park, Topeka, KS

Precision Aerobatics (Beginner, Intermediate,  
Advanced, Expert), Basic Flight\*, Old Time

CD: James Lee, 827 SE 43rd Street, Topeka, KS  
66609, (785) 266-7714, [jlee9@cox.net](mailto:jlee9@cox.net)

### **May 26-27**

New England Stunt Team Ron Connors Memorial  
Stunt Meet, Wrentham State School, Emerald St.,

Wrentham, MA

Saturday: Classic, Old Time

Sunday: Precision Aerobatics (Beginner,  
Intermediate\*, Advanced\*, Expert\*)

CD: Guerry Byers, 28 Byrd Ave, Roslindale, MA,  
02131-3105, (617) 327-3521, [guerrysr@comcast.net](mailto:guerrysr@comcast.net)

### **May 27**

Chicagoland Circle Cutters' Windy City Classic,  
Ned Brown Forest Preserve (Busse Woods), Golf Rd  
near Rte 53, Rolling Meadows, IL. Entrance is off Golf  
Rd. Turn into forest preserve, make the first left. Drive  
to the end and park.

Precision Aerobatics (Beginner, Intermediate,  
Advanced, Expert), Basic Flight\*

CD: Michael A. Schmitt, 34431 N. Tangueray Dr.,  
Grayslake, IL 60030, (847) 543-1216, [mschmit@attg.net](mailto:mschmit@attg.net)

### **June 1-3**

The Carolina Classic, Waymer flying field,  
Huntersville, NC. Take exit 23 E from I-77 to Hwy 115,  
go S on Hwy 115 to Holbrooks Rd. Field is 1.3 mi. E of  
115 on Holbrooks Rd.

Friday: Practice

Saturday: Classic, Profile\*, Basic Flight\*, Old Time

Sunday: Precision Aerobatics (Beginner,  
Intermediate\*, Advanced\*, Expert\*)

CD: William Francis, 634A Walnut St, Statesville,  
NC 28677, (704) 402-5927, [bill\\_franis@netzero.com](mailto:bill_franis@netzero.com)

Contact: Watt Moore, 981 Meadowlark Dr., Rock  
Hill, SC, (803) 366-9430, [medplans@cetlink.net](mailto:medplans@cetlink.net)

### **June 2-3**

Sir Dale Kirn's Knights' Joust 2006, Whittier  
Narrows Park, South El Monte CA, 60 Freeway and  
Rosemead Blvd. Show your AMA card at the gate to  
get into the park free.

Saturday: Old Time, Classic, Precision Aerobatics  
(Beginner, Intermediate)

Sunday: 1cc Aerobatics\*, Precision Aerobatics  
(Advanced, Expert), Profile 40\* (Sportsman,  
Competitor)

Contact: Dennis Coleman, (626) 332-9700, [Dencole@aol.com](mailto:Dencole@aol.com)

[www.kotrc.org](http://www.kotrc.org)

### **June 3**

Garden State Circle Burners' Old Time and Classic  
contest

Old Time, OTS II\* (flapped models only), Classic\*  
(Beginner, Intermediate, Advanced, Expert)

CD: Reuben MacBride, 95 John St., Clifton, NJ  
07013-1355, (973) 881-1948, [Tubeman5@aol.com](mailto:Tubeman5@aol.com)

<http://www.gscb.us>

### **June 9-10**

Balsa Beavers MFC Toronto & District Control Line  
Championships, Centennial Park, Etobicoke, Ontario

Sunday: Profile Stunt\*, F2B





<http://www.balsabeavers.ca/>

### **June 10**

Wisconsin Stunt and Scale Championship, Wagner Park, Pewaukee, WI

Precision Aerobatics (Beginner Jr., Beginner Sr.-Open, Intermediate, Advanced, Expert)

CD: Peter Mick, W70N1010 Hampton Ct, Cedarburg, WI 53012-3208, (262) 377-6137, pmick82541@aol.com

### **June 12-16**

Brodak Fly-In, Brodak flying field, Carmichaels, PA  
See Web site for map and directions.

Tuesday: Profile\* (Beginner, Intermediate, Advanced, Expert)

Wednesday: Classic (Beginner, Intermediate, Advanced, Expert)

Thursday: Old Time (Intermediate, Advanced, Expert), Ladies-only Basic Flight\*, Precision Aerobatics appearance judging (Intermediate, Advanced, Expert)

Friday: Precision Aerobatics flying (Beginner, Intermediate, Advanced, Expert) round 1

Saturday: Precision Aerobatics flying (Beginner, Intermediate, Advanced, Expert) round 2

CDs: Allen W. Brickhaus, Tom Hampshire, 100 Park Ave, Carmichaels PA 15320, (724) 966-7335; flyin@brodak.com

<http://www.brodak.com/fly-in.php?id=20>

### **June 16-17**

Dallas Area Summer Heat, Samuel Garland Park, E. Northwest Highway and Garland Rd, Dallas, TX

Saturday: Old Time, Classic

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Terry Kirby, 13639 Charcoal Ln Dallas TX 75234, (972) 247-4241, texas\_flyer2001@sbcglobal.net

ED: Dale Gleason, (940) 637-2169, N42222@nortexinfo.net

[www.DMAA-1902.org](http://www.DMAA-1902.org)

### **June 23-24**

Tulsa Glue Dobbers' Firecracker Meet, Neafus Field, 13376 S. Peoria, Glenpool, OK

Saturday: Stunt, Racing and Balloon Bust Triathlon\*

Sunday: The Mirror Meet\*: the stunt portion of the 1953 Mirror Meet (two skill classes)

CD: De Hill, 5811 S. Utica, Tulsa, OK 74105 (918) 743-4912 (day) (918) 743-4912 (eve), dfhill@juno.com

<http://www.tulsacl.com/Events.html>

### **June 23-24**

25th Annual Sig C/L Championships, Sig Field, Montezuma, IA

Saturday: Old Time, Sig Classic\*, P-40 Profile\*

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Mike Gretz, Sig Mfg Co, PO Box 520,

Montezuma, IA 50171, (641) 623-5154, mikeg@sigmfg.com

### **June 23-24**

Indiana-Kentucky Championships, Clark County Airport, Sellersburg, IN, exit 7 from I-65

Saturday: Old Time, Classic\*, Profile\*

Sunday: ARF\*, Precision Aerobatics\*

All stunt events have Beginner, Intermediate, Advanced, and Expert classes

CD: Byron Barker, Jr., 407 Mt Tabor Rd, New Albany, IN 47150, (812) 944-8511, linecontr@aol.com

### **June 23-24**

Jim Parsons Memorial Stuntathon, Pierce County Airport (Thun Field), Puyallup, WA, <http://www.nwskyraiders.com/thunfield.html>

Saturday: Profile\* (Sportsman, Expert), Old Time, Classic

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Howard Rush, 14321 SE 63rd Street, Bellevue, WA 98006-4802, (425) 746-5997, hmrush@comcast.net

<http://www.nwskyraiders.com>

### **June 24**

Garden State Circle Burners' June stunt meet  
Precision Aerobatics (Beginner, Intermediate\*, Advanced\*, Expert\*)

CD: Rich Peabody, 393 Fern St., Township of Washington, NJ 07676-5013, (201) 664-1929, rpeabody@verizon.net

<http://www.gscb.us>

### **July 8-14**

U. S. Control Line National Championships, AMA, E. Memorial Drive, Muncie, IN

Sunday: Precision Aerobatics\* (Advanced, Open) appearance judging. Advanced and Open entry deadline is noon Sunday.

Monday: Precision Aerobatics (Beginner\*, Intermediate) (unofficial NATs events)

Tuesday: Old Time, Classic (unofficial NATs events)

Wednesday: Precision Aerobatics\* (Advanced, Open) qualifying rounds 1 and 2.

Thursday: Precision Aerobatics\* (Advanced, Open) qualifying rounds 3 and 4.

Friday: Open Precision Aerobatics\* Top 20, Advanced Precision Aerobatics\* finals.

Jr. and Sr. entry deadline is 4:30 Friday.

Saturday: Precision Aerobatics (Jr., Sr., Open\*) finals, Walker Cup flyoff.

Beginner ED: Allen Brickhaus, abkb801@shawneelink.net

Intermediate ED: Bob Brookins, Clstunflyer@bobbbrookins.com

Old Time, Classic ED: Mike Keville, vsc-guy@cox.net





# C. F. SLATTERY

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**NEW**  
**THUNDER TIGER 36 STUNT \$135.00**  
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**STUNT MOTORS**  
**IRVINES-MAGMUM -ST-THUNDER TIGER**  
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**CATALOG S. A. S. E.**

Official-events ED: Warren Tiahrt, tiahrt@mindspring.com

Get registration form from AMA Events Department, 5151 E Memorial Dr., Muncie, IN 47302, (765) 287-1256, ext. 204, lonniee@modelaircraft.org, or

<http://www.modelaircraft.org/events/Entry%20Forms/2006%20CLPA%20Entry%20Form.pdf>

See PAMPA Web site for details: <http://www.control-line.org>

## July 28-29

Skylarks of Sharon Fly-In and Profile Stunt Contest, club field, Transfer, PA

Profile\* (Beginner, Intermediate, Advanced, Expert)

Two flights each day; score is best two of four.

CD: Bob Crusan, 1169 Chestnut St, Clarion, PA 16214, (814) 223-9695

Assistant CD: Phil Spillman, 350 Butterfly Ln., Hermitage PA 16148, (724) 983-1677, p.g.spillman@att.net

## July 28-29

Vancouver Gas Model Club Western Canada Stunt Championships, Rice Mill Road site, Richmond, B.C.: Take Steveston Hwy turnoff from Hwy 99, turn left. Left at No. 5 Road, Left onto Rice Mill, <http://www.nwskyraiders.com/ricemillrd.html>

Saturday: Old Time, Classic, Pukey Profile\*

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Chris Cox, (604) 916-3571, ccox1@telus.net

## July 29

The Great American ARF-OFF, Mavis Henson Field, County Road 102, 2.5 mi south of I-5 exit 536,

Woodland, CA

Precision Aerobatics,  
Commercial Control Line ARFs only\*

CD: Jim Aron (510) 654-2200 work, (510) 527-5377 home, UncleJimby@aol.com

## August 4-5

Prairie Fire Stunt Contest, Namao Field, Edmonton, AB

Saturday: Old Time, Classic

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert), Basic Flight\*

CD: Bruce Perry, 419 Klarvatten Lake Wynd, Edmonton, AB, T5Z 3B9 Canada, (780) 472-9000, abperry@telus.net

## August 11-12

Wichihawks' Air Capital Control

Line Championships, Planeview Park, Wichita, KS  
Classic, Old Time, P-40\*, Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Mike Tallman, 3014 Exchange St, Wichita, KS 67217-3122, (316) 524-4004, mike-tallman@webtv.net

## August 11-12

Fellowship of Christian Modelers Championships, AMA, E. Memorial Drive, Muncie, IN

Saturday: Classic, Old Time, Profile Stunt\*

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Allen Goff, 2100 N Carrollton Dr., Muncie, IN 47304, (765) 759-7473, jangof@aol.com, allengoff@fcmmodelers.com

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

## August 12

Middlesex Modelers' Precision Aerobatics Challenge, Middlesex Modelers' Field, Mountain View Park, Middlesex, NJ

Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Carlos Serra, 509 Elsie Ave, South Plainfield, NJ 07080-2766, (908) 756-6941, carlos.a@comcast.net

## August 12

Valley Circle Burners' Summer P-40 Stunt Contest, Apollo 11 Field, Sepulveda Basin, Van Nuys, CA Turn south off Victory Blvd across the tracks and past the first access road on the right. Continue on to a road that goes off at a Y on the right.

P-40 Sportsman\* (Beginner and Intermediate combined), P-40 Competitor\* (Advanced and Expert combined)

CD: Antone Kephart, 130 Violet, Monrovia, CA 91016, (626) 303-5266, tckephart@yahoo.com



### **August 18-19**

Paducah Aero Modelers' Western Kentucky/Southern Illinois Stunt Championships, McCracken County Model Air Park, Paducah, KY: Take exit 3 off I-24 on the Kentucky side of the Ohio River. Turn east on Old Cairo Road and find Coleman Road off to the right (south) at about one mile. Travel south on Coleman Road three quarters of a mile and turn left (east) on County Park Road. Go through the open, right, red gate and drive to the top of the hill.

Saturday: Beginner Precision Aerobatics, Basic Flight\*, Profile Stunt\*, Classic, Old Time

Sunday: Precision Aerobatics\* (Intermediate, Advanced, Expert)

CD: Allen W. Brickhaus, PO Box 206, Golconda, IL 62938, (618) 683-7611 (home), (618) 841-0089 (cell), abkb801@shawneelink.com

Contact: Charles Reeves, (270) 554-9920

### **August 18-19**

Michigan Signal Seekers' Michigan C/L Championships, SE corner of Michigan Ave. and Merriman, Westland, MI Access is from Henry Ruff, 1 block S of Michigan Ave.

Saturday: Old Time, Classic, Profile\*

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Curt Nixon, 8836 Utah, Livonia, MI, (734) 261-8134, captcurt@flash.net

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

### **August 25-26**

Skylarks of Sharon Fifth Annual Western Pennsylvania Stunt Championships, club field, Transfer, PA

Saturday: Old Time, ARF\*, Classic

All Saturday events have Beginner, Intermediate, Advanced, and Expert classes.

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Phil Spillman, 350 Butterfly Ln., Hermitage PA 16148, (724) 983-1677, p.g.spillman@att.net

Assistant CD: Bob Crusan, 1169 Chestnut St, Clarion, PA 16214, (814) 223-9695

### **August 25-26**

The New England Stunt Team Presents Stunt in the Berkshires, call CD for venue

Saturday: Old Time, Classic\*

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Bill Hummel, 260 Lape Rd., Nassau, NY 12123-3707, (518) 766-9432, camphummel@hotmail.com

### **August 26**

Rockford Stunt Classic, Kieselburg Forest Preserve, 5801 Swanson Rd, Roscoe, IL

Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Arthur Johnson, 1818 Oslo Drive, Rockford, IL 61108-6612, (815) 398-3490, art\_johnson36@insightbb.com

### **September 1-2**

New England Stunt Team Mitch Lilly Memorial Mass Cup Championship, Wrentham State School, Emerald St., Wrentham, MA

Saturday: Old Time, Classic

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Guerry Byers, 28 Byrd Ave, Roslindale, MA, 02131-3105, (617) 327-3521, guerrysr@comcast.net

### **September 1-2**

Charles Ash Memorial Greater Southwestern Championships, Samuel Garland Park, E. Northwest Highway and Garland Rd, Dallas, TX

Saturday: Old Time, Classic

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

Contact: Dale Gleason, 6003 E Lone Oak Rd, Valley View, TX 76272-9479, (940) 637-2169, N42222@nortexinfo.net

<http://www.dmaa-1902.org>

### **September 1-2**

US Control Line Precision Aerobatics Team Selection Finals, AMA, E. Memorial Drive, Muncie, IN F2B

Get entry blank from AMA Events Department, 5151 E Memorial Dr., Muncie, IN 47302, (765) 287-1256, ext. 231, lisaj@modelaircraft.org

### **September 8**

Michigan Control Line State Championship, Rouge Park, Detroit, MI

Old Time, Classic

CD: Ron Colombo, 14907 Garden St, Livonia, MI 48154, (734) 522-5399

### **September 8-9**

Canadian F2B Stunt Team Trials and Autumn Stunt Contest, Niagara Falls, Ontario

Saturday: Profile Stunt\*, F2B

Sunday: rain date

<http://www.balsabeavers.ca/>

### **September 8-9**

Peoria Area Wyreflyers' Heart of Illinois Stunt Championships, Detweiler Park, Peoria, IL

Saturday: P-40\*

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert), Old Time

CD: Russ Gifford; 1302 2nd Street; Camanche, IA 52730, (563) 259-1649, gst92@mchsi.com

### **September 9**

ERMAC XXXII Annual Control Line Contest, NJ





Precision Aerobatics (Beginner, Intermediate, Advanced, Expert), Old Time\* (GSCB rules)

CD: William Lindemann, 44 High St, Metuchen, NJ 08840-2339, (732) 494-0993

### **September 14-16**

Memphis Stunt Classic, Millington Barnstormers' Club, 4256 Sykes Road, Millington, TN, approximately 13 miles north of Memphis

Friday: practice

Saturday: Classic\*, Old Time, Profile\*

Sunday: Precision Aerobatics (Beginner, Intermediate\*, Advanced\*, Expert\*)

CD: Louis Rankin, 1262 Mathis Rd, Atoka, TN 38004-7902, (901) 837-1511, lwr\_@msn.com

### **September 15-16**

Seguin Championships, Randolph Air Force Base Auxiliary Field, Seguin, TX

Saturday: Old Time, P-40\*

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: John Hess, 131 Fantasia, San Antonio, TX 78216, (210) 342-8029, jphess@satx.rr.com

### **September 16**

Bergen County Flyers' New Jersey Aviation Hall of Fame Benefit, Palisades Park swimming pool parking lot, 275 Broad Ave, Palisades Park, NJ

Precision Aerobatics\* (Beginner, Intermediate, Advanced, Expert)

CD: Rich Peabody, 393 Fern St., Twp of Washington, NJ 07676, (201) 664-1929, rpeabody@verizon.net  
www.richpeabody.com

### **September 22-23**

Lafayette Esquadrielle Broken Arrow 20 Stunt and Scale, Buder Park, exit 272 N from I-44, Valley Park, MO

Old Time, Classic, P-40\*, Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Robert Arata, 561 Goldwood Dr, Ballwin MO 63021-6315, (636) 391-0272

### **September 22-23**

Meet 'n Meat IX, Mavis Henson Field, County Road 102, 2.5 mi south of I-5 exit 536, Woodland, CA

Saturday: Old Time, Classic

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Jim Aron (510) 654-2200 work, (510) 527-5377 home, UncleJimby@aol.com

### **September 22-23**

Cleveland Area Stunt Champs, Cuyahoga County Fairgrounds, 164 Eastland Road, Berea, Ohio (but use the Bagley Road entrance 1/4 mile west of Old Oak Boulevard). Take the Bagley Road Exit 235 from Interstate 71.

Saturday: Old Time, Classic, Profile\*, ARF/ARC\*

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

Contacts: Dave Heinzman, (440) 734-6491, DHeinz6746@cs.com ; Joe Rusyniak (440) 951-9967  
http://www.control-line.net

### **September 29-30**

Tulsa Glue Dobbers' Stunt Contest, Neafus Field, 13376 South Peoria Ave, Glenpool, OK

Saturday: Old Time\* (GSCB Rules), Classic\*, P-40\*

Sunday: Precision Aerobatics (Beginner Jr., Beginner Sr.-Open, Intermediate\*, Advanced\*, Expert\*)

CD: De Hill, 5811 S. Utica, Tulsa, OK 74105 (918) 743-4912 (day) (918) 743-4912 (eve), dfhill@juno.com  
http://www.tulsacl.com/Events.html

### **September 29-30**

Capital City Championships, Cooper Stadium, I-70 exit 98, Columbus, OH

Saturday: Old Time, Classic, Profile\*, ARF\*

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Keith Bryant, 4706 Sheets Rd NW, Lancaster, OH 43130 (740) 756-4468, kbryantool@columbus.rr.com

### **September 30**

New York Stunt Team Joe Ortiz Memorial Stunt Bash

Precision Aerobatics (Beginner, Intermediate, Advanced, Expert), ARF\*

Contact: Bob Lampione, 15319 41st Ave., Fl. 2, Flushing, NY 11354-4948, (718) 463-1755, rlampione@nyc.rr.com

### **October 6-7**

West Ohio CL Stunt Contest, club field behind Wegerzyn Garden Center, 1301 E. Siebenthaler Ave., Dayton, OH

Saturday: Classic, Profile\*, ARF\*

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: John Jordan, 2332 S Dixie Dr., Kettering, OH 45409 (937) 294-7971, balsadust1956@woh.rr.com

### **October 6-7**

Contest and Stunt Clinic, Samuel Garland Park, E. Northwest Highway and Garland Rd, Dallas, TX

Saturday: Stunt Clinic

Sunday: P-40\*, Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Phillip Nickles, 6640 Champion Rd, Midlothian, TX 76065-5200, (972) 723-2311, debbienickles@aol.com

Assistant CD: Tom Farmer, 3621 S Elm St., Grand Prairie, TX 75052-6333, (972) 262-4772

### **October 6-7**

Hi Johnson Memorial, Apollo 11 Field, Sepulveda

Basin, Van Nuys, CA Turn south off Victory Blvd across the tracks and past the first access road on the right. Continue on to a road that goes off at a Y on the right.

Saturday: Old Time, Classic, P-40\*

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Bill Barber, 2509 Whitechapel Pl., Thousand Oaks, CA 91362 (805) 241-0453 barcam@verizon.net

### **October 6-7**

WOLF Fall Follies, Bill Riegel Field, Salem Airport, Salem, OR

Saturday: P-40\* (Sportsman, Expert), Classic (Sportsman, Expert)

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: John Thompson, 2456 Quince St., Eugene, OR 97405, (541) 689-5553, JohnT4051@aol.com

www.flyinglines.org

### **October 7**

Napa Valley Vintage Stunt Regional 3, Kennedy Park, Napa, CA

Old Time, Classic

CD: Jim Aron (510) 654-2200 work, (510) 527-5377 home, UncleJimby@aol.com

### **October 7**

Garden State Circle Burners' Fall Air Show Part I, Palisades Park swimming pool parking lot, 275 Broad Ave, Palisades Park, NJ

Old Time\*, OTS II\* (flapped models only), Classic (Beginner, Intermediate\*, Advanced\*, Expert\*), Precision Aerobatics (Beginner)

Mike Cooper, CD: (973) 770-0263 or (201) 704-7081 day of event, mcooper@asco.com

### **October 14**

Garden State Circle Burners' Fall Air Show Part II, Palisades Park swimming pool parking lot, 275 Broad Ave, Palisades Park, NJ

Precision Aerobatics\* (Intermediate, Advanced, Expert)

CD: Mike Ostella, (973) 364-1105, or (201) 704-7081 day of event, mike.ostella@verizon.net

### **October 19-21**

Carolina Criterium, Waymer flying field, Huntersville, NC. Take exit 23 E from I-77 to Hwy 115, go S on Hwy 115 to Holbrooks Rd. Field is 1.3 mi. E of 115 on Holbrooks Rd.

Friday: Practice

Saturday: Basic Flight\*, Profile\*, Old Time, Classic\*

Sunday: Precision Aerobatics (Beginner, Intermediate\*, Advanced\*, Expert\*)

CD: William Francis, contact Watt Moore, 981 Meadowlark Dr., Rock Hill, SC, (803) 366-9430, medplans@cetlink.net

### **October 20-21**

29th Annual Golden State Stunt Championships

Saturday: Old Time, Classic

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

Contact: Jerry Silver, 2011 N Beverly Dr., Beverly Hills, CA 90210, (310) 275-6359, jsilverflyer@adelphia.net

### **October 20-21**

Lee Lorio Memorial, Independence Park, Baton Rouge, LA

Saturday: Profile\*

Sunday: Precision Aerobatics (Beginner, Intermediate, Advanced, Expert)

CD: Gil Causey, 3229 Meadowood Dr., Slaughter, LA 70777, (225) 658-6139, gil6964@cox.net

### **October 21**

Lafayette Esquadrielle Old Time and racing contest, Buder Park, exit 272 N from I-44, Valley Park, MO

Old Time

CD: Gary Frost, 623 Derek Dr, Wentzville, MO 63385, (314) 800-4400, qualadv@centurytel.net

### **November 18**

G.S.C.B. Stunt Forum, Wayne PAL

Contact: Mike Ostella, (973) 364-1105, or (201) 704-7081 day of event, mike.ostella@verizon.net





## CONTEST REPORTS



**James Mills**  
1206 S 15th Street  
Ozark, MO 65721  
(417) 581-3929  
mllscal@quixnet.net

**New England Stunt Team Mitch Lilly Memorial Mass Cup Championship**  
September 23-24, 2006, Wrentham, MA  
Results from Guerry Byers, CD



### PAMPA Expert

Judges:	Bic Brannen, Dick Wolsey			
1	Rick Campbell	Saturn	PA .61	548
2	Waldo Cargill	Blitz	PA .61	515
3	Bill Hummell	Prowler	OS .40	475

### PAMPA Advanced

Judges:	Bic Brannen, Dick Wolsey			
1	Will Moore	Gieseke Nobler	Electric	531
2	Bob Robertshaw	Original Design	ST .46	491.5
3	Leon Bowen	Vector	Aero Tiger .36	478
4	David Chang	Redesigned Tutor II	OS .52 FS	431

### PAMPA Intermediate

Judges:	Earl Midgley, Guerry Byers			
1	Norm Liversidge	Tutor II	Doublestar .54	447.5
2	Stephen Everett	Profile Cardinal	OS .40FP	351

### PAMPA Beginner

Judges:	Earl Midgley, Guerry Byers			
1	Fred Fettie	Prowler	OS .40	249.5
2	Sarah Hummell	Miss Sarah	OS .20	192
3	Lyle Spiegel	Twister	OS .46LA	191

### Classic

Judges:	Bic Brannen, Guerry Byers			
1	Will Moore	Gieseke Nobler	Electric	544
2	Rick Campbell	Oriental	Brodak .40	540.5
3	Steve Yampolsky	Chipmunk	Brodak .40	529.5

Best Classic Plane Rick Campbell  
Old Time

Judges:	Dick Carville, Will Moore			
1	Dick Wolsey	Madman	DoubleStar .40	231.5
2	Rick Clark	Upstart	McCoy .40	200
3	Norm Liversidge	Smoothie	K&B .40	39

Best Old Time Plane Dick Wolsey

Concours Winner Rick Campbell  
Mass Cup Champion Norm Liversidge

CD: Guerry Byers  
Co-CD: Richard Carville

### Ice-O-Lated Stunt and Racing

February 25, 2007, Valley Park, MO

Results from Allen Brickhaus,

<http://stunthanger.com/smf/index.php?topic=4167.0>

### PAMPA Advanced

1	Steven Smith	283.5
2	John Holliday	198.5

### PAMPA Beginner

1	Charles Fowler	251
2	Terry Bolin	114.5
3	Emerald Dennison	54.5
4	Willow Gregory	14.5

CD: Robert Arata

### Not-Presidents'-Day Contest

February 25, 2007, Dallas, TX

Results from Dale Gleason

First off, let me thank all of the contestants. Those unable to come missed a good one. In P-40 there were 23 entries and in our first A.R.F., for DMAA, we had 16 entries making a grand total of 39 entries. That is just wonderful for a February contest. The weather was great, despite the 50mph winds the day before. I personally think that the different classes also helped the entries, but let's give credit where credit is due, The FOOD. Everybody comes down

for Linda Gleason's spread. Anybody who ever attended one of our contests knows about her food and the helpers she recruits could not be any better. Thanks again for our helpers, Rachel Wilson, for keeping us organized and Priscella Scott for the Tabulating and the cookies. If I didn't add the cookies in I would be in trouble. One more thought on the organizing and keeping things flowing, the assistant C. D., Tom Niebuhr, made sure of that. He kept pilots informed and kept the information flowing. Thanks again for the Judges, John Grigsby, and Steve Moon doing the honors for P-40. The honors go to Bill Lee and Phillip Nickles for doing the first A.R.F. contest for DMAA. Very nicely done guys. I very much appreciate it and I know that it is a thankless job, but the pilots really appreciate your opinion. Thanks again, you guys, for allowing me to be the C.D., you all make it real easy and make the club look good.

Mike Scott

#### P-40 Expert

Judges: Steve Moon, John Grigsby

1	Larry Oakley	Valedictorian	Fox .40	504
2	Dee Rice	Ring Master	Brodak .25	482
3	Bill Wilson	Cardinal	OS .40 LA	477
4	Tom Farmer	ForeRunner	Magnum .36	459
5	Dale Gleason	Oriental	Brodak .40	387.5

#### P-40 Advanced

Judges: Steve Moon, John Grigsby

1	Sean McEntee	Primary Force	OS .25 LA	454
2	Mike Finnigan	Ring Master	Double Star .40	442.5
3	Joe Gilbert	Nobler	Brodak .40	436.5
4	Don Hutchinson	SBD Dauntless	OS .40 FP	425
5	Jim Phillips	P47	OS .40 FP	423.5
6	Mike Greb	Cardinal	OS .40 LA	412
7	Dave Ek	Duck	Fox .35	190.5

#### P-40 Intermediate

Judges: Steve Moon, John Grigsby

1	Mike Donovan	Twister	OS .40 LA	434
2	Dale McCord	Tutor	OS .40 FP	431
3	Stephen Jeansonne	Chipmunk	OS .40 LA	426
4	Darryl McComb	Mustang	OS .40 FP	418.5
5	Norm Faith	Mod. Twister	Brodak .40	409

#### P-40 Beginner Open

Judges: Steve Moon, John Grigsby

1	Steve Wolfe	Cardinal	OS .40 LA	161
2	David Russum	Skyray	OS .25 LA	122

#### P-40 Beginner Senior

Judges: Steve Moon, John Grigsby

1	Pat Gibson	Flite Streak	OS.25 LA	100
2	Rudra Mithal	Banshee	OS .35 FP	93.5
3	Ryan McElroy	Original	OS .40 FX	75
4	Amir Saleh	Banshee	OS .40 LA	74.5

#### ARF Expert

Judges: Phillip Nickles, Bill Lee

1	Bill Wilson	Cardinal	OS .40 LA	486.5
2	Tom Farmer	Score	ST .60	401.5

#### ARF Advanced

Judges: Phillip Nickles, Bill Lee

1	Sean McEntee	Primary Force	OS .25 LA	444
2	Joe Gilbert	Strega	ST .60	425
3	Mike Greb	Score	RoJett .65	409
4	Mike Finnigan	Nobler	Brodak .40	403
5	Jim Phillips	Nobler	Brodak .40	397
6	Dave Ek	Bi-Slob		385

#### ARF Intermediate

Judges: Phillip Nickles, Bill Lee

1	Dale McCord	Tutor	OS .40 FP	421.5
2	Mike Donovan	Vector	RoJett .40	420.5
3	Norm Faith	Score	ST .51	361

#### ARF Beginner Open

Judges: Phillip Nickles, Bill Lee

1	Steve Wolfe	Cardinal	OS .40 LA	203.5
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#### ARF Beginner Senior

Judges: Phillip Nickles, Bill Lee

1	Pat Gibson	Flite Streak	OS .25 LA	82.5
2	Ryan McElroy	Flite Streak	OS .25 LA	45
3	Rudra Mithal	Flite Streak	OS .25 LA	36
4	Amir Saleh	Flite Streak	OS .25 LA	33.5

Tabulators:

Rachel Wilson, Priscella Scott

Runners:

Jake Moon, Priscella Scott

Food:

Linda & Dale Gleason, George Hamby

CD:

Mike Scott

Assistant CD:

Tom Niebuhr





## VSC XIX CLASSIC RESULTS - MARCH 2007

First Name	Last Name	Plane	Power	Flt #1	Flt #2	Total	Place
Bob	Hunt	Caprice	AeroTiger 36	536.5	548.5	1085.0	1
Ted	Fancher	Chizler	OS 35s	541.5	530.0	1071.5	2
Bob	McDonald	60 Strathmoor	PA-40 Light	516.5	535.0	1051.5	3
Kaz	Minato	Humongous	Stalker 40SE	532.0	517.5	1049.5	4
Bob	Whitley	Hawker Hunter	ST-60	518.5	531.0	1049.5	5
Masuru	Hiki	Super Master	Stalker 40	531.0	513.0	1044.0	6
Gene	Martine	Charles Mackey Lark	AeroTiger 36	521.0	506.0	1027.0	7
Lou	Wolgast	Fury	OS 46LA	531.5	472.0	1003.5	8
Dale	Barry	Humongous	PA-40	512.5	490.5	1003.0	9
Joe	Gilbert	Nobler	B-40	493.0	491.5	984.5	10
Roger	Wildman	Caprice	AeroTiger 36	494.0	485.5	979.5	11
Keith	Trostle	Rabe BearCat	GMA JETT 50	529.0	448.0	977.0	12
LeRoy	Black	Spacehound	Stalker 51	503.5	467.0	970.5	13
Wesley	Dick	62 Ares	AeroTiger 36	494.0	469.5	963.5	14
Antone	Kephart	Cavalier	Brodak 40	474.0	480.0	954.0	15
Jerry	Silver	Excalibur	McCoy 40	474.0	476.5	950.5	16
Jeff	Reeves	Thunderbird VECO Plan	ST-46 Plasma	493.5	456.5	950.0	17
Jim	Hoffman	USA-1	ST-60	493.0	454.5	947.5	18
Dan	McEntee	Shark 45	ST-51	483.0	454.5	937.5	19
Robin	Sizemore	Tucker Special	OS LA-40	471.0	465.5	936.5	20
John	Wright	Nobler	McCoy 40 Hybrid	485.5	443.5	929.0	21
Gaylord	Elling	Venus	AT 36	477.0	451.5	928.5	22
Jerry	Chambers	Still's Stuka	ENYA 35	468.5	448.0	916.5	23
Mark	Smith	Spacehound	ST-51	420.5	464.5	885.0	24
Grady	Widener	Dave Gierke Novi	Staker 40RE	460.0	421.5	881.5	25
Bob	Duncan	Ares	OS 40LA	438.5	438.5	877.0	26
Steve	Harris	His Majesty	PA-65	455.5	420.5	876.0	27
Bob	Lipscomb	Novi III	RoJet 40	460.0	393.0	853.0	28
Eric	Rule	Jamiason	Brodak 40	384.5	431.0	815.5	29
John	Paris	Ringmaster	Fox 35	477.0	337.0	814.0	30
James	Morway	Super Clown	Fox 35	386.5	415.5	802.0	31
Gary	Akers	Thunderbird II	Royal 40	413.5	372.5	786.0	32
Richard	Wolsey	Nobler	McCoy 40 Hybrid	408.0	378.0	786.0	33
Lou	Crane	ARF Nobler	Fox 35	411.5	367.0	778.5	34
Scott	Harness	ARF Nobler	OS 35s	446.0	332.0	778.0	35
Mike	Ostella	Pow Wow	Brodak 40	464.5	305.0	769.5	36
Dale	McCord	Jr. Nobler	OS 15LA	395.0	356.5	751.5	37
Roy	Trantham	Humongous	DS 54 BB	485.0	241.5	726.5	38
John (Doc)	Holiday	Oriental	Brodak 40	302.0	415.0	717.0	39
Nick	Lemak	Electra	Fox 35	448.5	263.0	711.5	40
Robert	Compton	Gladiator	TT 36	186.0	470.0	656.0	41
Sean	McEntee	Ringmaster	L&J Fox 35	440.0	205.0	645.0	42
Mike	Haverly	JD Falcon	Brodak 40	476.5	147.5	624.0	43
Ray	Firkins	Phoenician	AeroTiger 36	526.0	0.0	526.0	44
Gordan	Delaney	American Egale	PA-40	516.0	0.0	516.0	45
Phil	Granderson	Olympic	AeroTiger 36	507.0	0.0	507.0	46
Don	McClave	Skylark	OS LA-40	504.0	0.0	504.0	47
Warren	Tiahart	Ebejer Venus	AeroTiger 36	502.0	0.0	502.0	48
Allen	Brickhaus	Rayett	OS 40H Big Art	493.5	0.0	493.5	49
Mike	Pratt	Ruffy	AeroTiger 36	490.5	0.0	490.5	50
Michael	Duffy	57 Nobler	OS 35s	485.0	0.0	485.0	51



## VSC XIX CLASSIC RESULTS - MARCH 2007 (continued)

First Name	Last Name	Plane	Power	Flt #1	Flt #2	Total	Place
Joe	Reinhard	Gypsy	AeroTiger 36	484.5	0.0	484.5	52
Chris	Brainard	Oriental	Magnum 36	484.0	0.0	484.0	53
John	Callentine	Caprice	OS 46LA	478.0	0.0	478.0	54
Keith	Sandberg	Pow Wow	Enya 35	476.5	0.0	476.5	55
John	Miller	All American Eagle	40RE	475.0	0.0	475.0	56
Glen	Allison	Electric Oriental	AXI	471.5	0.0	471.5	57
Ken	Ribardo	Ares	AeroTiger 36	469.5	0.0	469.5	58
Dave	Shirley Jr.	Midwest Couigar	Magnum 40	469.5	0.0	469.5	59
Jim	Rhoades	Humongous	Magnum 36	464.5	0.0	464.5	60
Burt	Brokaw	ARF Nobler	OS 35s	458.0	0.0	458.0	61
Igor	Panchenko	Kramskyh	Talka-7	454.5	0.0	454.5	62
Lew	Wollard	Viking	Fox 40	448.5	0.0	448.5	63
Mike	Donovan	Tucker Special	Magnum 36	448.0	0.0	448.0	64
Tom	McClain	B-26 Marauder	Two Mag 36(s)	445.5	0.0	445.5	65
Mark	Gerber	Palmer Hurricane	ST-46	441.5	0.0	441.5	66
Lewis	Corbett	Caprice	Brodak 40	439.5	0.0	439.5	67
Chris	McMillin	Hawker Hunter	ST-60	438.5	0.0	438.5	68
Larry	Renger	Nobler	OS 40	434.0	0.0	434.0	69
Jeff	Welliver	ARF Nobler	OS 35s	411.5	0.0	411.5	70
Dale	Gleason	VECO Chief (Fighter Ver)	OS 35s	408.5	0.0	408.5	71
Jim	Kraft	Magician	McCoy 40	403.0	0.0	403.0	72
Robert	Brookins	Oriental	Brodak 40	398.0	0.0	398.0	73
Robert	Harness Jr.	ARF Nobler	OS 35s	376.5	0.0	376.5	74
Jerry	Arana	Electric Jamison	ORBIT 12-15	354.0	0.0	354.0	75
Dave	Shirley Sr.	Jamison	OS 40LA	337.0	0.0	337.0	76
Andrew	Borgogna	Stuka Stunt	Fox 35	322.0	0.0	322.0	77
Ty	Marcucci	52 Nobler	Brodak 40	300.0	0.0	300.0	78
John	Elias	Tucker Special	Brodak 40	281.5	0.0	281.5	79
Bill	Ledden	Super Clown	OS 25FP	231.0	0.0	231.0	80
Jon	Standingbear	Jr. Flight Streak	OS 15LA	67.5	96.5	164.0	81
Don	Hutchinson	59 Thunderbird	Magnum 36XL	101.5	0.0	101.5	82



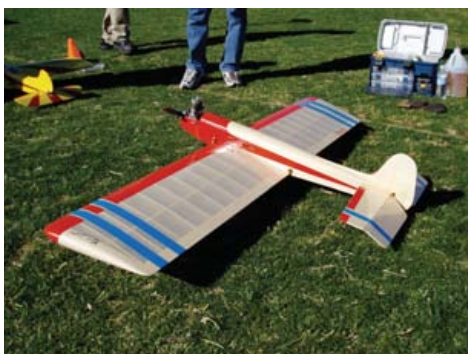






## VSC XIX IGNITION RESULTS – MARCH 2007

First Name	Last Name	Plane	Power	Flight #1	Flight #2	Score	Place
Jim	Kraft	Taurus	Anerson Spitfire	306.24	307.74	307.74	1
Dale	Gleason	Yates Madman	Torpedo 32	278.50	301.49	301.49	2
Don	Hutchinson	Dragon	Orwick 29	278.00	297.99	297.99	3
Joe	Gilbert	Guided Whistle	Super Cyclone	100.00	288.48	288.48	4
Glen	Allison	Humongous	Super Cyclone	219.10	280.74	280.74	5
Dave	Shirley Jr.	Dragon	Super Cyclone	218.00	220.50	220.50	6
Mike	Donovan	Viking	Super Cyclone	180.65	0.00	180.65	7
Bob	Lipscomb	Big Cut-Up	Super Cyclone	145.75	65.75	145.75	8





## VSC XIX OLD TIME RESULTS – MARCH 2007

First Name	Last Name	Plane	Power	Flt #1	Flt #2	Score	Place
Bart	Klapinski	Madman	L&J Fox 35	306.5	315.0	621.5	1
Keith	Trostle	Big Job	OS 49	311.5	306.0	617.5	2
Kaz	Minato	Humongous	Stalker 40SE	306.5	303.0	609.5	3
Charlie	Reeves	Big Job	Long Nose Fox 59	282.5	302.0	584.5	4
Dale	Barry	Humongous	PA-40	298.5	282.5	581.0	5
Gaylord	Elling	All Australian	Brodak 40	277.0	301.5	578.5	6
Lou	Wolgast	Viking	ST-46	275.5	301.0	576.5	7
Jim	Lee	Humongous	Madewell 49	279.0	283.0	562.0	8
Chris	Brainard	Jamison	Brodak 40	280.5	276.5	557.0	9
Pete	Peterson	Jamison	L&J Fox 35	268.5	288.0	556.5	10
Bob	Smiley	Jamison	Brodak 40	270.5	283.5	554.0	11
John	Wright	All America Sr.	LH Fox 35	283.0	267.5	550.5	12
Jim	Hoffman	Upstart	Brodak 40	276.5	272.5	549.0	13
Ted	Fancher	Jamison	L&J Fox 35	250.0	294.0	544.0	14
LeRoy	Black	Jamison	Brodak 40	248.5	291.5	540.0	15
Dale	Gleason	Yates Madman	Torpedo 32	280.0	259.0	539.0	16
Allen	Brickhaus	Adams' Special	L&J Fox 35	269.0	268.5	537.5	17
Robin	Sizemore	Dragon	OS 35s	266.0	267.5	533.5	18
Rene	Berger	Squaw	Fox 35	271.5	261.0	532.5	19
Roger	Wildman	Jamison	36	257.0	273.5	530.5	20
Mike	Scott	Jamison	TT 36	271.5	252.0	523.5	21
Mike	Ostella	Jameson	OS 35s	260.5	262.0	522.5	22
John	Paris	Ringmaster	Fox 35	256.5	266.0	522.5	23
Mike	Donovan	Galloping Comedian	Fox 35	268.5	250.0	518.5	24
Scott	Dinger	Lancet	VECO 35	264.0	252.5	516.5	25
Nick	Lemak	Jamison	Brodak 40	257.5	258.0	515.5	26
Joe	Gilbert	Ringmaster	B-25	240.5	273.0	513.5	27
Roy	Trantham	Humongous	DS 54 BB	258.5	254.5	513.0	28
Ray	Firkins	Ringmaster	Saito 30	243.0	266.5	509.5	29
Chuck	Feldman	Jamison	DS 40 BB	244.5	264.0	508.5	30
Ken	Gulliford	Jamison	Brodak 40	244.5	263.5	508.0	31
Bob	Duncan	Jamison	Magnum 32	276.0	229.0	505.0	32
Burt	Brokaw	Jamison	Fox 35	247.0	255.0	502.0	33
Sean	McEntee	Ringmaster	L&J Fox 35	257.5	240.5	498.0	34
Glen	Allison	Electric Jamison	AXI	265.0	231.5	496.5	35
Jim	Kraft	Dragon	Fox 35	232.5	263.0	495.5	37
Dave	Shirley Jr.	Stuntwagon	OS 61	240.0	255.5	495.5	36
Mark	Smith	Humongous	ST-46	253.5	240.0	493.5	38
Lew	Wollard	Viking	Fox 40	248.0	245.0	493.0	39
Mike	Pratt	Jamison	B-35	226.0	254.0	480.0	40
Keith	Sandberg	Super Duper Zilch	Enya 35	242.5	237.5	480.0	41
Jerry	Silver	All American	VECO 19	264.5	212.5	477.0	42
Jerry	Chambers	Still's Stuka	Fox 35	236.5	236.5	473.0	43
Jim	Rhoades	Humongous	Magnum 36	235.0	235.0	470.0	44
Dan	McEntee	All American Sr.	Fox 35	233.0	235.5	468.5	45
Dale	McCord	Barnstormer	OS 35s	216.0	252.0	468.0	46
Bob	Lipscomb	Barnstormer	OS 35s GMA Custon	212.5	223.5	436.0	47
Richard	Wolsey	Madman	DS 40 BB	208.0	220.0	428.0	48
John (Doc)	Holiday	All American	Fox 29	209.0	218.5	427.5	49
Jerry	Arana	Jamison "E"	Orbit 15-16 Electric	182.5	242.0	424.5	50
Mike	Haverly	Barnstormer	OS 25FP	203.5	219.0	422.5	52

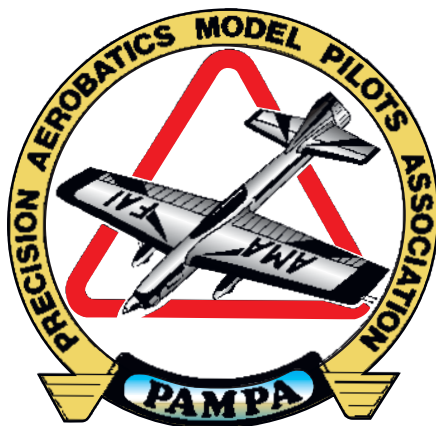


## VSC XIX OLD TIME RESULTS – MARCH 2007 (continued)

First Name	Last Name	Plane	Power	Flt #1	Flt #2	Score	Place
Eric	Rule	Jamison	Brodak 40	185.0	237.5	422.5	51
James	Morway	Super Clown	Fox 35	207.0	179.5	386.5	53
Robert	Brookins	Humongous	Silverfoxx Tall 40	244.5	137.0	381.5	54
Dave	Shirley Sr.	Jamison	OS 40LA	175.5	202.0	377.5	55
Scott	Harness	Ringmaster	Fox 35	196.5	156.5	353.0	57
Jim	Thomerson	Sportwing	STG 20-150	181.5	171.5	353.0	56
Bill	Ledden	Super Clown	OS 25FP	174.0	163.0	337.0	58
Lou	Crane	EZ-5 Powig		130.5	203.5	334.0	59
Tom	McClain	Bellanca Flash	OS 35s	200.0	131.5	331.5	60
Steve	Holt	Smoothie	TT 36	178.0	148.5	326.5	61
Andrew	Borgogna	Stuka Stunt	Fox 35	136.5	166.5	303.0	62
Bob	Whitley	P-38 Semi Scale	Two OS 15FP	104.5	122.5	227.0	63
Ty	Marcucci	Ringmaster	OS 25FP	118.0	79.5	197.5	64
Stan	Haugarth	Nobler #1	RoJet 40	186.0	0.0	186.0	65
Larry	Renger	Firebaby	Atwood Shriek 049	114.0	48.0	162.0	66
Chris	McMillin	TigerCat Semi Scale	Two OS 15FP	69.0	73.0	142.0	67
Jon	Standingbear	Ringmaster	Fox 35	60.0	63.0	123.0	68
Dan	Mrozek	Ringmaster	OS 35s	111.5	0.0	111.5	69







# March 2007 VSC XIX JUDGES AND HELPERS

## VSC Banquet Organizers:

Jim & Sharon Hoffman

## OTS Ignition Event Director:

De Hill

## OTS Ignition Judges:

Doug Taffinder  
De Hill

## OTS Ignition Tabulation:

Ruby Hill  
Kay Bruce

## OTS Judges:

Mike Keville  
John Callentine  
Bob Emmett  
Al Hiegar

## Classic Judges:

Darrell Harvin  
Bob Parker  
Rickii Pyatt  
Pete Peterson

## Pit Bosses:

Linda Gleason  
Linda Brainard  
Leroy Black  
Gary Gingerich

## Pull Test:

Rod Claus  
Steve Helmick  
Bill Lee

## Score Sheet Runners:

Bart Klapinski  
Rick Green  
Linda Wolgast  
Monica Iverson  
Joe Reinhard  
Darrell Harvin

## OTS & Classic Tabulation:

Jenny Emmett  
Shareen Fancher

## Appearance Judges:

Jim Beaman  
Ken Gulliford

## Score Sheets/ Flight Order / Contest Forms, & Scoreboards:

Nick Lemak  
Leroy Black  
Robin Sizemore

## Sale of 'T' Shirts / Pins / Hats / etc.:

Peggy Capitanelli

## Official Hugger:

Monica Iverson

## Contest Director:

Lou Wolgast

## Assistant Contest Director:

Robin Sizemore

## Portable Toilets

Robin Sizemore

## Field Setup

Rene Berger  
Bart Klapinski  
John Callentine  
Glen Allison  
Ed Capitanelli

## AirPlane Data , Registration Check-In

Lila Lee  
Jenny Emmett

## Sealing the Asphalt Circles and Pit Areas

Bill Heyworth  
Elaine Heyworth

## Special Award Recipients:

Keeper of the Flame: Charlie Reeves  
Gialdini Sportsmanship: Richard Wolsey  
Spirit of '46: Joe Gilbert (Guided Whistle)  
Spirit of '52: Mike Donovan (Galloping Comedian – Fox 35)  
Spirit of '64: Bob McDonald (Strathmoor)  
OTS Simi Scale: Bob Whitely (P-38 Paul Plecan Plans)  
Classic Simi Scale: Tom McClain (B-26 Marauder)  
GMA Memorial: Joe Gilbert  
Most Unusual Entry: Tom McClain (B-26 Marauder)  
Classic Pilots Choice: Mark Gerber (Palmer Hurricane)  
Best Appearing Old Time: Kaz Manato (take-apart Humongous)  
Best I-Beam (Fred Carnes): Bob McDonald (Strathmoor)  
Tom Lay Most Fun Award: Dan McEntee





## PAMPA RULES



**Alice Cotton-Royer**

2435 NE 84th Ave.,  
Portland, OR 97220  
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### The Legality of the A-J Firecat

There's been talk. Is it legal? Can you fly it in OTS? Well, it's been discussed before and I say now is the (second?) time to put it to rest.

And who knows the answer for sure? Why Frank Macy, of course. He is the keeper of the flame for American Junior, the company who made our first control-line models and is still making them. Frank Macy is the control-line American Junior historian and restoration modeler, builder and flyer that has the archives (letters, photos, historical data) of the very beginnings of our hobby.

All of the following comes from his archives, which he lovingly gave to me to share with you. It is a noble cause of his to do such a thing. I, however, have no noble cause here except that I fly a Firecat and I don't want to hear any nonsense about not being able to fly it at the next OTS contest.

First of all: YES it IS legal.

How do we know?

Well, there is the matter of "the letter" written by Bob Smurthwaite that has all the proof you need about the legality of the Firecat. Who is Bob Smurthwaite you ask? Well he is simply the guy who invented and kitted many American Junior control-

line model airplanes in the 1950s such as the Firecat and has passed on all the information about these airplanes to Frank Macy. Here is his letter in full:

And in case you are interested, here is a photo of the "new" Firecat. See it at this website:

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

Click on Firecat

Cost: \$79.95 plus \$10 shipping

The parts are laser-cut. Check it out and have a great time flying it in OTS next year!

-Alice Cotton-Royer



This is the plant where the Firecat was made in Baker, Oregon, winter 1951. Bottom right: Bob Smurthwaite making a Firecat fuselage.



These are pictures of the original A-J Firecat. Photos were taken in 1951





P. O. Box 468  
Baker, Oregon 97816  
Phone 523 7868

December 7, 1988

Dear Frank:

On this "day of infamy" I will relate some facts to you for a clarification as to the origin and development of the A-J "FIRECAT" stunt model which I designed.

I first designed a trike-gear profile model to use my new three-line "FLIGHT CONTROL" system, the second model ever to fly with this new "throttle control" system, also using my exhaust-baffle installation which became known as "VARI SPEED". This model was my original "COBRA". It was a highly developed "Pre-fabbed" design which was flown by many over several years. This model was in existence in 1950...two years after my first "3-line" model had flown. Both were very successful.

Two beautifully finished "FIRECAT" models were built and had flown before Jim Walker saw them and flew them. I worked from my own company here in Baker with an exclusive contract with Jim Walker from 1950 through to July 1, 1955 when he had been stricken severely ill and had to leave active business dealings...which, for him, was most difficult.

At first, Jim doubted that new spar-less wing would sustain quick turns of forces imposed in the kind of stunt performance he wanted. However, after flying the "FIRECAT" versions both here in Baker and then Portland, He was elated, particularly upon viewing my production facilities and all new processes to mass produce such a model. Believe me, these new ideas did not come overnight.

He called from a trade show in Chicago...just prior to it...requesting me to ship him a couple of the "FIRECAT" kits...parts for the design as soon as I could get them to him. That had to be February of 1952. I shipped them via Railway Express...on the Union Pacific "Streamliner" which runs directly through Baker from Portland to Chicago...a run of 32 hours from Portland to Chicago...I do have an excellent memory, fortunately.

He did not display these models in his exhibit for the public to see... He kept them in his hotel room and only allowed special viewing to those he knew and trusted...as the story was told to me soon after that show.

He gave me a big order for the "FIRECAT" soon after that show. A carton came to me in the mail from Jim...back in Portland...a few months later... A couple of days after receiving it...Jim phoned me...as we often called each other...I couldn't understand why he had sent me a "RINGMASTER" kit... I had set it aside after briefly looking it over and never gave it any further thought...It certainly was not the quality...in material or design or manufacture that we had...Jim was insistent that I take a look at it... I then noticed what Jim was so irate about...their wing was closely copied from the "FIRECAT" wing...rib spacing, airfoil, span and all...except that their parts were not nearly as well machined or as "advanced" for quick and easy assembly. That sequence is fact, Frank...It "involved" my efforts and Jim was very disgusted with the way others tried to copy what he had master-minded...Jim never "stole" any ideas from anyone to my knowledge.

Jim Walker paid and supported my factory with its several employees for those few years until his illness. We had plans for many more new products. He kept his "word" in every detail with my efforts... His desire for the finest quality products was precisely the same as mine...We used the finest graded balsa wood ever made available to anyone...for a "starter". Fortunately for me, I was always able to design and develop new concepts in structural ways as well as the model designs which always out-flew any other "product" ever seen. That was really easy...for me to provide what Jim sought...a "mutual" effort in all those brief years of association.

I had first met Jim Walker in late July, 1942 after passing tests to become an Army Air Force Aviation Cadet...being sworn into that elite "reserve" to await my active orders to report for training... I was advised at the time I was sworn into the military as a "CADET" that it would be a wait of three or four months before receiving my orders.

Two days later...on a Sunday afternoon...I met Jim...I had taken my first control-line model with me to Portland and was staying with friends who formerly lived in Baker. They wanted to see it fly...so we went to the Grant High School field. I had never met or seen or knew Jim... He drove up soon after I had flown my model...which was a scale model of a famous European fighter type plane which had established world speed records before the war started. I had seen magazine plans and this was probably the first scale control line model ever to be built and flown...and it was a very successful one. Originally, I designed it to use a new OHLSOON "23" engine but soon realized that it would be very tail heavy...the usual results with short nosed scale designs... So, I installed a new OHLSOON "60 Custom" engine in it and this was perfect...for the several years I flew it. Friends in Baker built a special plywood case for it and shipped it to me at an airbase... I was allowed to keep this big crate under my bunk...without being treated in any negative respect from the usual military discipline... In fact, it was flown on a few occasions in view of many military "observers". I shipped it "home" before leaving for overseas duty.

That meeting with Jim Walker...who lived nearby Grant High School... was an event never to be forgotten...He invited me to come to his factory the next day and I was treated to a royal "tour" by Jim and his brother Bill. He asked me to stay and work with him until my orders came...He always treated me royally as did his family and all those around the factory.

In the early fifties...I had two different "3-line" system models which I took to Portland and let Jim fly them...One smaller model was the basis for his "FIREBEE" model...which my plant produced for Jim. The other "throttle-controlled" model was that original "COBRA"... He was elated and flew both many times on those two occasions...He never did see the actual "3-line" bellcrank or examine how that new system worked...I'm sure that he would have really progressed with its use had his illness not cut short his keen efforts.

The "FIRECAT" existed before the "RINGMASTER" I know.

J. Robert Smurthwaite

*Robert Smurthwaite*



## ASK KEN



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Not being one to shy away from controversy, this issue addresses some of the more controversial questions. First is an age-old question that came up the very first time that an airplane was attached to a control line.

### **Is there a correct way to start, hold, and release a control line airplane?**

The short answer is Yes! Now that's out of the way, let's get to it. Different airplanes have different features and different construction methods that require holding and starting from positions modified from the basic start from the front, and hold in the rear initial positions. Familiarity and Complacency are bigger problems than knowledge. Did you ever get your finger or thumb into the back of a running engine's propeller and notice, after the snappy withdrawal initiated by that foreboding BRRRRRRPPPP sound, that your flesh was unharmed? Did it make you braver, or more attentive? Did you get into the back of the prop again? Of course you did! That lesson, filed into your brain, sent a mixed signal to your memory banks that made you complacent in front of the prop where that foreboding sound does usually produce damaged flesh....

The lesson is, there is a correct way to start and hold. The collective years of starting and holding, and watching others, have resulted in an endless quantity of useless starting and holding knowledge. Useless that is, unless of course the

knowledge is shared with you. Because it is such a simple task, many of us do not brief new holders on the procedures, and do not correct faulty or dangerous starting procedure when modelers stray from safe practice. This is especially true for friends, or an older, more experienced flyer. You just don't know what to say. If you can't think of what to say before it happens, think of how uncomfortable it will be during the ambulance ride.

Just as you would never think of putting your hand or fingers into the spinning blade of a propeller (although we sometimes forget and get seriously hurt) you should never start your engine, adjust your engine, or place any part of your body in the propeller "Plane of Rotation" (PoR) for any length of time. The propeller "Plane of Rotation" is an imaginary line extending from a starting point at the center of the prop nut out through each prop tip to infinity.

If your prop gives way, or picks up a rock or debris while the engine is running, the prop pieces or debris become projectiles that can seriously injure, damage, or kill you. Likewise, if you are over, under, or at either side of the PoR, and you slip or lose your balance, you can be drawn into the blades. If it helps, imagine a buzz-saw on the front of your plane, and stay away.

Always adjust your engine, read your tachometer, and remove the starter battery from the rear of the plane, behind the propeller "Plane of Rotation". Don't reach over, or around, or try to tach from the front of the prop while simultaneously adjusting from the rear of the prop. This two-handed balancing act puts your body over the prop, and it will eventually get you (especially if you have loose clothes).

When holding a plane for someone, hold the plane from the right rear, left hand on the fuselage or tail, right hand on the right wing. This, "Safety" type hold can be used on all type of planes, including gearless and flying wings. It allows you to be outside the circle at all times, and gives you a clear path to exit without turning your back on the plane. Never hold from the inside of the circle (right hand on the fuselage or tail and left hand on the wing), or from the rear (one or both hands on the plane or tail). Never turn your back on the plane, until after it comes around for the first lap and you are sure where it will go, and then only long enough to get farther away if needed. When your back

is turned, you never know what could happen or how many steps away from the handle pick-up point the pilot went, or if they moved away at all. It's better to be ready to duck or dodge, and not have to, than to be surprised from behind.

Make sure that both you and the pilot understand the signals that will be used. Sounds simple, but if the pilot's intention is for you to hold while he sets down the handle to come out of the circle for one reason or another, and you interpret the hand signal to mean release the plane, off goes an uncontrolled airplane for a potential 7 minute 59 second wild and dangerous ride.

Don't push down on the plane. It can sometimes be an unconscious act that you don't mean to do. A lot of people do it, and swear they don't. That's because they don't know they do it. Pushing down does increase your grip on the plane, but it makes the plane "jump" when you release it. This can be very annoying for pilots during a contest when they are trying to get the smoothest takeoff they can. On the other extreme, it can cause the plane to nose-over and tip or break a prop. Most holding flaws, like pushing down, usually get blamed on the pilot for not being smooth, when in fact they never had a chance. Did you ever have a plane nose-over two or three times in a row? Did it finally get airborne when the holder gave it a little shove? That's because they put the downward force into the shove that time.....Of course, it could have been wheel-drag, but you would have discovered that the first time it nosed over, right?

Holders have more responsibilities than just holding on and letting go. They should check the leadouts to see if one of the connectors is cocked, or even worse, hung-up on the other. Holders should clear the circle for flight. Yes, the pilot should do that as well, but the holder sees the entire circle, while the pilot sees only half of it. One of the holder's most important responsibilities is to warn the pilot of any obstacles like: kids on bikes, birds, dogs, inattentive or fascinated observers, roller skaters, skateboarders, and a Gazillion other things that could potentially cause problems.

You could, of course, alternately use a Stoooge for launch. But then, you would have to do all the holders work as well, and remember, your back is to half the action



the whole time your flying. Hopefully if you use a stooge you're not one of those, "tack from the front and tune from the rear of the PoR" pilots. Getting yourself to medical care could turn into a real one-person circus if you get a serious nick.

With a well-trained holder, the pilot is much more at ease, and more capable of the best flight they can perform. With good starting practice, they can do it without stitches or a scary story.

### **How do I know if the chemicals that I use for building and cleaning are safe, and is there a correct way to use them?**

Those of you that work in industry, or deal with safety items, are familiar with the Material Safety and Data Sheets or MSDS. For those of you that don't, there is a wide world of knowledge out there in the form of an individual MSDS for nearly everything there is. Go on-line with your computer, and just type MSDS, and nearly any individual item. You will get the Government MSDS Sheet for that item. On the sheet you will find everything you ever wanted to know about that particular item, and some things that you didn't. You will find Hazard, Health, Fire, Storage, Handling, and a host of other categories all about your selected topic, and all on the MSDS. Try a few if you have time, MSDS methanol (methyl alcohol), or MSDS penetrating oil. If you want something really scary, MSDS carbon fiber (graphite), and one that is not so scary, MSDS Acetone.

Just for fun, I entered MSDS Bowling Ball in the search window. Did you know that each bowling ball has its' own MSDS, and since the bowling ball and their materials are kept confidential and proprietary, each individual ball has an independent application sheet for an MSDS that must be filed with the United States Bowling Congress. Geeeeezezzz, all I wanted was some sort of common ground to use as an example, and found out that bowling balls are nearly Top Secret!

There is an MSDS for nearly everything, and it is as easy as typing in MSDS and the name of the item you want to check. Sometimes you learn more than you wanted to know.

However, since it is said that ignorance is bliss, maybe you best not check things out unless you really want to know. Don't you feel smarter already?

### **Should line ends be crimped or wrapped? Where can you get a**

### **professional Crimping Tool?**

Crimping or wrapping, wrapping or crimping, what is the correct way to end wire rope? Wire rope, or wire cable has only one correct way to be terminated: it should be eye spliced using a Marlinspike, then the joint sleeved over. There is no controversy over this. The wire rope industry (and the U.S. Navy) will bear this out. There is a not-so-sophisticated eye splice animation located at [www.animatedknots.com/splice/index.php](http://www.animatedknots.com/splice/index.php) to give you an idea of how this is done. There are other methods of providing an eye at the end of your wire rope, but for the diameters that we use, finding multiple "U" Bolts that fit is impossible.

OSHA Standard: 1919.24(a) Reads: An eye splice made in any wire rope shall have at least three tucks with a whole strand of rope and two tucks with one-half of the wires cut out of each strand. However, this requirement shall not operate to preclude the use of another form of splice (U-Bolts) or connection which can be shown to be as efficient and which is not prohibited by Part 1918 of this chapter.

However, since around 99% of you don't know how to perform an eye splice, much less sleeve the work when you're done, and finding a T-Tiny Marlinspike to work with would prove to be a task in itself, let's look at what all of us can do.

First, let's look at wrapping: This method of line termination, for either cable or single strand (solid) lines is illustrated in the Academy of Model Aeronautics Rule Book (Control Line General, Page CLG-5). Some important things to remember; don't solder it when you're done (it changes the temper properties of the metal), and don't let the cutting edge of your pliers or dikes touch the cable or wrapping material unless you intend to cut the wire. Some folks like to put colored heat-shrink tubing over the wrap to protect it and serve as an up-down indicator. This is a good idea, as long as you don't use too much heat to shrink the tube!

OK, Crimping: This method of line termination for either cable or single strand, solid lines is illustrated in the Academy of Model Aeronautics Rule Book as well (Control Line General, Page CLG-5). I have to tell you that I'm an aircraft mechanic, and I do not like to use crimping on flight control cables. Yes, the Ultralight, Homebuilt, and Experimental planes have used crimping as a part of

their design for over thirty years. Yes, it works. I just have a problem (one that I probably will not get over) with securing things with a "Crush-fit". It's damaged goods by the nature of the technique.

Now that I have had my say, there have been some very clean, and very successful, applications of this crush-fit securing technique. The most notable use is from people that cannot afford for the line loop to slip out, or for the line to break. The very nature of their business depends upon the speed and utility of the crush fit, or crimping. Fishing is the profession, and they have some very well proven supplies and tools available, at very reasonable rates. In fact, the fishing crimping supplies and tools seem to be much cheaper than those available from either industry, or model airplane specific suppliers. Do some research, and you will find affordable, very high quality stuff in the fishing section. Those salt-water guys especially. They are dealing with huge fish with sharp teeth, and have quite a bit of experience with crimping wire rope.

Be very careful what you buy. Electrical cable crimpers are not what you are looking for. They are very tempting at between \$10.00 and \$30.00 a pair, vs. \$120.00 to \$200.00 for industry or hobby crimpers, but they are specialized for conducting electricity, not preventing slippage, and they are not a good securing device.

On the other hand, fishing supply crimpers, at between \$20.00 and \$80.00, are excellent securing devices. Here are three good places to find affordable crimpers, swages and spindles:

[www.alltackle.com](http://www.alltackle.com)  
[www.anglerscenter.com](http://www.anglerscenter.com)  
and [www.berkeley-fishing.com](http://www.berkeley-fishing.com)

If you have been looking for a reason to justify buying a quality multitool, the Gerber Deluxe Fisherman Tool has three crimping bits. Remember the tool is only as good as the crimps, swages, or spindles that you use. Don't get cheap with the hardware, it might cost you a plane.

Next time Ask Ken will feature decent inexpensive control line engine availability, glow plug variety and use, and a few more of your questions.

-Ken Gulliford





## BALL DIAMOND FLYER



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(740) 389-2985

[harrisebertlaw@marion.net](mailto:harrisebertlaw@marion.net)

### The Feno by Ted Goyet

I just got a new kit for RSM Products; the plane is the small but very capable Feno. I have had the plans for this ship for years, however, I never got around to building it. Too many other projects got in the way. I am going to try to build two classic ships this winter. Classics interest me most; they remind me of my High

School flying buddies and the planes we flew when we were trying to learn the pattern.

Conversations would go something like this (Hey, did you hear, Pat Giles did a four leaf clover last Sunday. I'm going to try one next week.) No one in our group ever heard of Feno back then, but the Veco Squaw (especially Joe Wagner's last version.) was popular with our guys.

The kit wood looks good and the entire plane is lazer cut. This little guy has a 42" wing and about 320 sq. in. in wing area. I had planned to fly this little plane before the article appeared, but the weather in Ohio has not broken yet. So, the Feno weighs just 32 oz. And has a Fox .35 for power. The picture is of the RSM version and mine is ready to go. I had to put an ounce in the tail to get the CG right. My friends Pat Giles and Clyde Richey and I will fly the Feno as soon as we can get some good weather; I will report back then.

I am glad that RSM kitted this plane, but I love to build. I am working on a 1951 Nobler right now and I have just finished a Don Still

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Stuka. The inspiration for the Stuka was Wes Dick. I have watched Wes fly the Stuka at many contests.

See you at the contests this summer. Till then, drive a cheap car, live in the basement and burn fuel. Right Bill?

- Jim Harris





## BEGINNING



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**R**eaders Input: Here are a couple of pics that somehow “went astray” elsewhere. However, all’s not well, as this wounded warrior, sans half-a-wing clearly shows:



Dirty Danny’s famed Flite Streak/Os combo at the PAC field in British Columbia



Gaggle guarder, Dirty Danny, muses while current playmate Zilch X, at his feet, awaits the next tasty morsel of fuel. Someone’s ‘Stormer’ (second from bottom) displays scabs common when puncture pressure, tensile or compression forces exceed tissue capabilities – often abbreviated as “dork”. Pic inset shows a Diablo (bottom) in wingover.  
Youds photo. (Doug Dahlke)

The message is: “thou shalt keep the tender hide of they balsa bird away from the evil clutches of the Great Ground monster, lest it go ill for thee whenest he riseth up and smite they bird a might blow” – Harold. Speaking of Harold Youds, he mentions that he’s gestating at the design board again and will soon be birthing a new called the “Clone.” See he borrowed some DNA from the SN “Berserker,” but will genetically modify it to get off rough grass fields and will use



Repairing this wing will be like eating ice cream with a knitting needle.

a Fox .35 for oomph. Lastly is this pic of Lady Bug. Friend Keith’s flying has been dampened by medical issues.



Keith Varley hold Youds’ Lady Bug saucer as Os .40 makes muscle. Earlier rain was so hard, there was puddles on their lake.

New column contributor Gerry Boyd, another friend of Harold’s and P.A.C. member shown with his sort-of “mini-Manx Cat,” circa 1950s.



Gerry Boyd’s sort-of mini-Manx Cat. No specs given. Estimate 24” span and .15 power.

Howard’s “Mike/Ike”, mid-1930s racers. Cool stuff Frank – Beginner doable too. Also from Frank is his knowledgeable interpretation of what a Fireball Twin might have looked like, IF the AJ factory had designed one. No plans at present,



Job got you feeling like you heard cats trying to keep up with “High-Tech?” Take a break! Dig how little work’s needed to turn Frank Macy’s AJ Firecat into a ‘30s’ racer, neat!

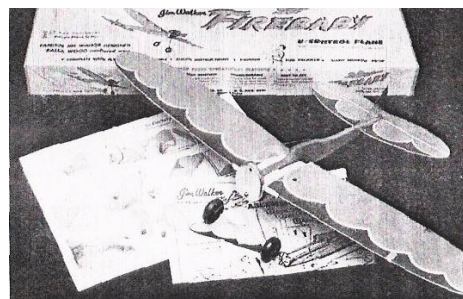
but if interested, contact Frank at address below. If that didn’t grab you, try this FIRST, legit, ARF 1/2A stunter! Also, the only balsa-based, US ARF! Very high wood quality here. (See my previous SN test of the prototype.) Larry Renger recently flew the full OT pattern with a



Heavens-to-Betsy! Only the 2nd known “Fireball Twin.” A 1940s conversion used twin Arden .09s. Macy’s rig runs twin La .15s for snarl, interesting!

Firebaby in front of witnesses. Kit quality exceeds the original. Contact: Frank Macy, 1501 S.W. Baker St. #53, McMinnville, OR 97128. Send SASE for flyer.

Chicagoland Circle Cutters Club offers the only beginner’s decal I’ve



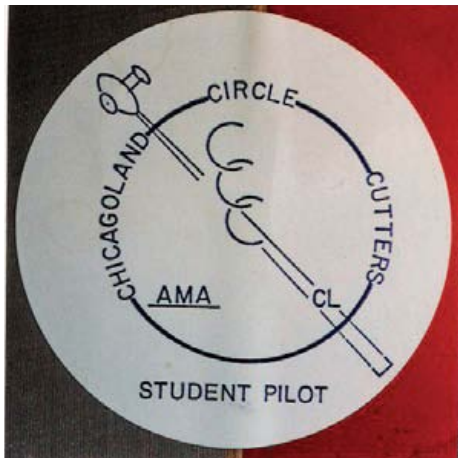
The Firebaby II, a new kit made in the tradition of Jim Walker’s famous 1/2A U-Control model of the 1950’s. Faithful SN readers already have read my factory prototype test of this. Kit’s now available. First OT pattern, stuntable, 1/2A ARF, US built.





seen. Impressive! Is your club called the "C-4?" If not, why not -- you do a "bang-up" job!

Stooges (Part "Three"): Here a Yank inspiration from yesteryear for those



C-4 decal says "student Pilot" -- cool idea.

needing it.

"Kidventure's A-Comin'": At the end of July 2007. You all come, hear?

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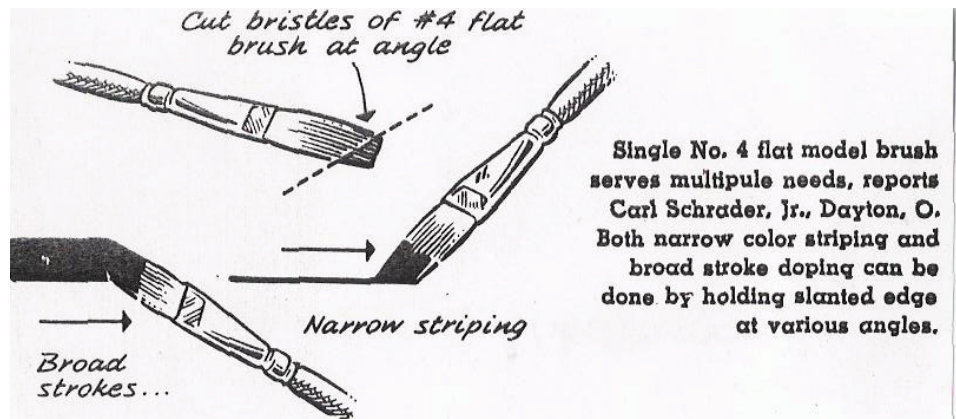
**J. J. BENEDICT COMPANY** Dept. 22  
3540A 23rd Street San Francisco 10, Calif.

Another inanimate stooge from yesteryear.

Volunteer now!

Building Tip: Simple ideas are more likely to be used, so here ye be.

Rutan's Balsa Shortage: Even the semi-comatose know of Burt Rutan, maybe the brightest aero engineer to tread dirt. He recently couldn't find balsa at his local hobby shop, see Model Aviation, 11 or 12/2006, "Letters." Now I'm not saying ARFs cause this, but modelers have been told "ARFs won't affect our ability to build our own designs." Some have replied "What happens when we

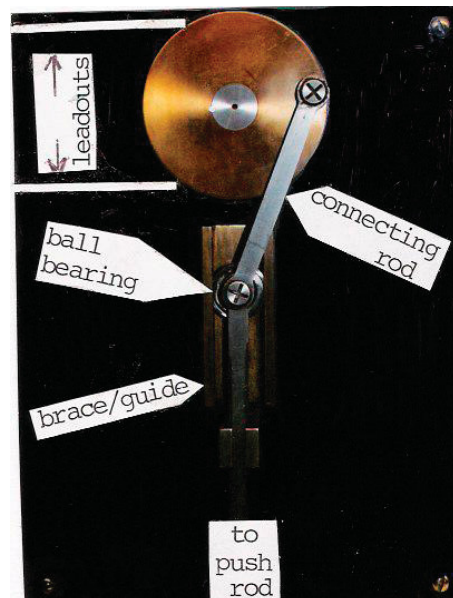


Cut bristles at 45 to 60 degree angle.

can no longer buy balsa?" Although details are lacking, apparently in some areas, that time is here now.

Dead-Straight, Pushrod Action: Not hard. Here's how to do it. Try a nylon brace guide.

Less-Common Measurements: A short while back, this column provided



Need dead-straight pushrod action? Either regular or circular bellcrank works.

measurements to fend off boredom while making my contribution to the trendy "Information Smog," stylishly used to confuse issues. Muchly, those measurements were of a larger class, so, here's the other end of the scale, wee (itself a measurement) measurements: Dash = 1/8th teaspoon, Pinch = 1/16th teaspoon, and Smidgen = 1/32nd teaspoon. There, now you can safely plasticize dope with castor oil.

M.O.M.: Here's the second and final model hauling trailer installment. As before, this was designed to tote take apart models. So, if packing a one

piece model, it should ride nose down in sponge rubber/foam. The spinner, prop, gear, and wing leading edge ought to absorb bumps in a sponge rubber foam slot with downward rubber band tension to prevent model jumping out of carrying slot. For spring figures, 20 or so each would include: trailer, model toolbox, model and striking a pothole with one wheel at downhill speed.

Cartoon: No joke! This actually happened! (only Ken's rationale has been speculated on.) Which class he entered at the Mirror Meet is unclear, but judge's eyeballs were seen to roll in their sockets. An unconfirmed report claims a two mph decrease in speed after take off, due to the high angle of attack required for flight.

Fiction 'N' Fact, From Doug's Almanac:



KEN'S REBELLION AGAINST "THE CONFINING LAWS OF AERODYNAMICS" AT THE NY MIRROR MEET ENTERED LESS-EXPLORED AREAS. A FOX .59 FLEW "IT" VERY FAST - 5 WHEELS AND 10 DUCTED TIN CANS, NOTWITHSTANDING. AN ANVIL-LIKE WING LOADING RESTRICTED "IT" TO THREE STUNTS: TAKE OFF, LEVEL FLIGHT AND LANDING.

Ken's NY Mirror Meet rebellion against "the confining law of aerodynamics" entered less-explored areas. A Fox .59 flew "it" very fast -- 5 wheels and 10 ducted tine cans, notwithstanding. An anvil-like wing loading restricted "it" to three stunts: Take Off, Level Flight, and Landing.



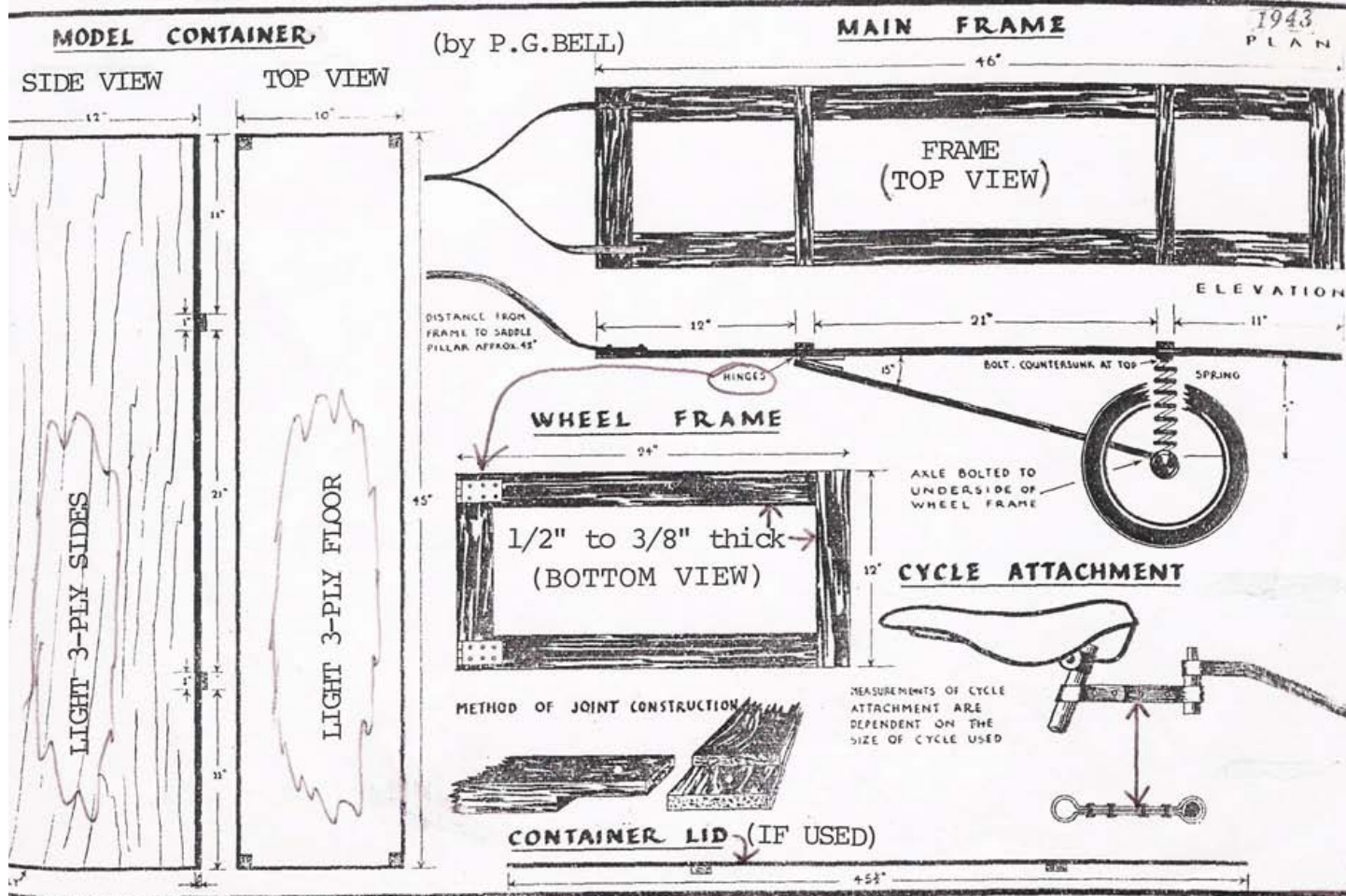
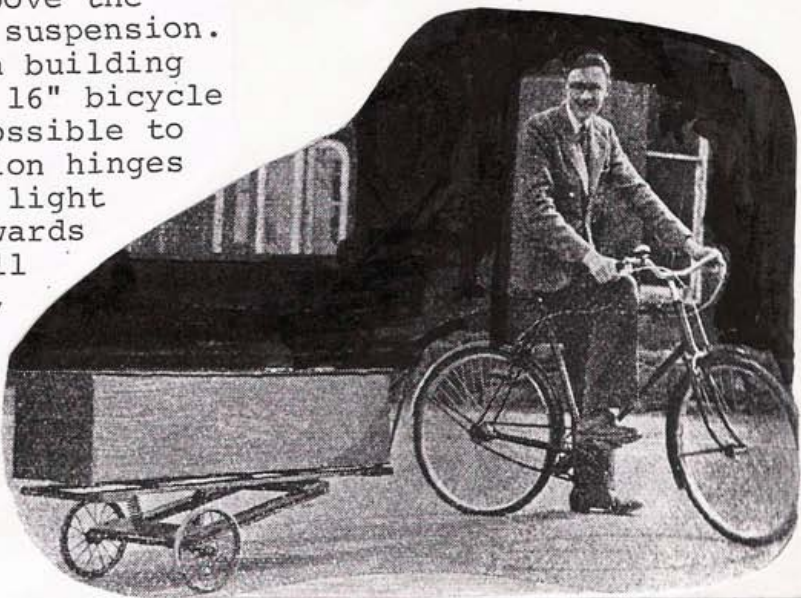
WHEN THE LAST FLYABLE MODEL HAS BEEN SMASHED, THE LAST HOBBY SHOP BANKRUPT AND BALSA'S NO LONGER CUT FOR RETAIL, SOME MAY REALIZE THAT WE SHOULD HAVE KEPT OUR MODELLING SKILLS.

-Doug Dahlke

This trailer is a clear step above the first version shown, as it has suspension. Much of the Mar/Apr 2007 column building tips apply here, e.g. use kids 16" bicycle wheels, widen the trailer if possible to reduce side sway, etc. Suspension hinges are 2" wide. Keep construction light and carry the model toolbox towards the front. A \$5 K-mart tarp will keep things dry should it rain, plus give you a place to set things down without losing them. Decorate with club and PAMPA logos. You can use this rig with a moped, if needed.

(d.d.)

## MODEL CARRIER





## BUILDING



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**H**i, boys and girls, it's me again. This time, I'd like to talk about tools, jigs, and fixtures.

I make or improvise many of my tools, and almost all my jigs and fixtures. I told you I'm cheap! But, there's more to it than that. There's a lot of satisfaction in making your own, and sometimes a time saving as well. You can spend a lot of money on a high zoot fuselage or wing jig. It may (or may not) save some assembly time, once you've got it, but most fixtures or jigs can be built in a day or less. You don't have to wait for custom manufacture or shipping. Super accuracy? Personally, I don't get it. As long as you have a reasonably flat (within small fractions, not thousandths\*) surface, you can build as accurately as balsa and hand assembly will allow.

\*Using a feeler to check gap under a "straight" edge over 36"/48" is a farce. How do you determine the deflection of the straightedge due to its own weight?

The out of flat of the surface doesn't really effect the ability to establish a truly flat building plane, as long as you know where it's out and which way. Nor is there any need to quantify the deviation. Most building methods use standoffs of some kind, which have to be adjusted

anyway. I'd much rather establish flat in the actual part of the jig doing the holding, than depend on my work surface never moving.

As an example, I build fuselages on a rod system similar to the one commonly used for wings.



Initial setup of the fuselage fixture

The baseboard is a 44"x18" piece of 5/8" birch plywood. This is reinforced on the sides by hardware store steel slotted angle 48" long. The outer ply grain is in the length direction. Simply screwing the angle to the base takes out most of the (readily measurable) warpage, as this material is generally fairly flat.

The actual building surface is a length of 5/8" ply 48"x 6" with the outer grain lengthwise. This is clamped or screwed to the center of the base with 2" overhang on each end.

The standoffs are made of 1/4" RC grade balsa scrap. A number of equal length pieces are tack glued together and sawed to true all sides to square, that is to say that any two corners of the stack are at 90° to each other\*. A hole the size of the fixture rod is drilled through the stack near one end, and on the centerline. This is best done on a drill press, but careful hand drilling is ok. The hole should be as nearly square to the surface as possible. Now the blocks are cut off at the center of the hole, separated and numbered.

\*This is more for convenience than necessity. Starting with equal lengths, square to the bottom makes "fine tuning" easier.

### Now: The setup.

Two standoffs are CYAed to the centerline of the base near each end. A piece of guide rod is laid in the center of the half hole, spanning the

two, and another standoff added in the center. Before gluing the center one, rotate the rod 90, then 180 then back to 360. Note movement, if any and in which direction it moved. If the center standoff moved in the 90/270 plane, or if its fit loaded/unloaded, the rod is not straight, get rid of it. If it moved without disturbance of the center, you're almost done. Replace the center standoff with another from the stack. The rod should act the same. Place the original center one in an intermediate position between the center and ends. If the fit is looser than the center one, the rod is deflecting from it's own weight. Raise the center one, and the intermediate half as much, by using bond paper shims until all have the same "feel". Repeat with the rest of the standoffs. At this point, you will be as straight as most mortals can build. Anything referenced to the "straight" rod will be, within reason, straight also. Glue the standoffs, along with the shims, in place at each fuselage bulkhead location. Use a tri-square to ensure they are vertical.

Obviously, you can carry this to the point of absurdity. The human eye is capable of seeing a few thousandths of deviation in a seemingly "straight" edge or between a number of points in an apparently "straight" line. All that's needed is a perspective that makes the distortion evident. "Line of sight" is a pretty accurate judge of linearity. "Boresighting" the rod/tube, will give confirmation of straightness. You are using a tube aren't you? See below.

A few words about the rods themselves: (1) Tubing is better than solid, it has almost the same modulus and is lighter so there's less static deflection. (2) Aluminum is not as good as steel, it's lower in weight, but due to its lower modulus, it deflects more easily in use. (3) Carbon is better than either, it's lighter and has a higher modulus than either steel or aluminum. Obviously, carbon tube (if it's straight) is best of all.

To use, mark all\* the formers with centerlines and tack glue them in a stack. Using white glue for the tacking allows time for careful alignment of the centerlines in both

vertical and horizontal directions. Then carefully drill the stack on the centerline to a tight fit on the jig rod. Separate the formers and thread them, in order, on the jig rod. Slide them to their approximate locations and set the jig rod in place on the standoffs. Clamp or tack each bulkhead, near it's bottom, to it's respective standoff in alignment with the centerline of the tube and standoff. Sight down the length to ensure all centers line up. Add the front crutch and the sides, using the dummy former at the front to establish the horizontal reference. Glue the molded top shell in place or, if you're using a block, tack the top block. At this point remove all the standoffs except the front and rear. The fuse is now stable enough to work on "up in the air". It can be placed back in the jig to check alignment or to mark wing or stab incidence lines thrust line, etc.



Three helpful tools.



A-17 fuselage under construction in jig.



Looking rear through the cockpit, showing bulkheads and center tube, with one former ready to be removed from it's frame.

\*This includes one dummy made to fit between the motor mounts at the front of the crutch, see photo #1.

The photos show the setup and the jig with the fuselage of my new A-17 stunter under construction. Also shown are two very useful tools I didn't make, and another I

improvised.

The first is a laser line level I bought for ten bucks from the "bargain table" at the local hardware, very useful for initial setup. The second is a laser pointer, two bucks from the same source, which I use for bore sighting the tube, (you don't get any straighter than a coherent light beam). Last is a height marking gauge made from two, two buck tri-squares found on the same table, plus a ball point pen cartridge, invaluable for marking fuse, wing, and stab reference lines. These tools are handy to have, even if you use a commercial jig.

This method can be applied to jigs for almost any model airplane part. Multiple tube wing and stab jigs can be set up using the same standoff method to qualify the building plane by laying three rods chordwise across the jig rods. Lay one each at the tip, root, and middle, of the panel, then sight down the tips of the rods spanwise. Obviously, these rods must be tested for straightness in the same way as the others, by turning them and observing for center or end movement.

You might be concerned that the jig isn't "beefy" enough. This is deliberate. In my experience, most warps/misalignment are caused by built-in stresses from force fitting

parts that are mis-cut or warped at the start. A warped fuselage side or wing LE can be forced into place by a fixture or jig that is too stiff. If a part doesn't slip into place without force, find out why before you use it, and correct the problem.

Well, that's it for now, see you next time. Until then, let's hear from you. Call or E-mail me at the address above.

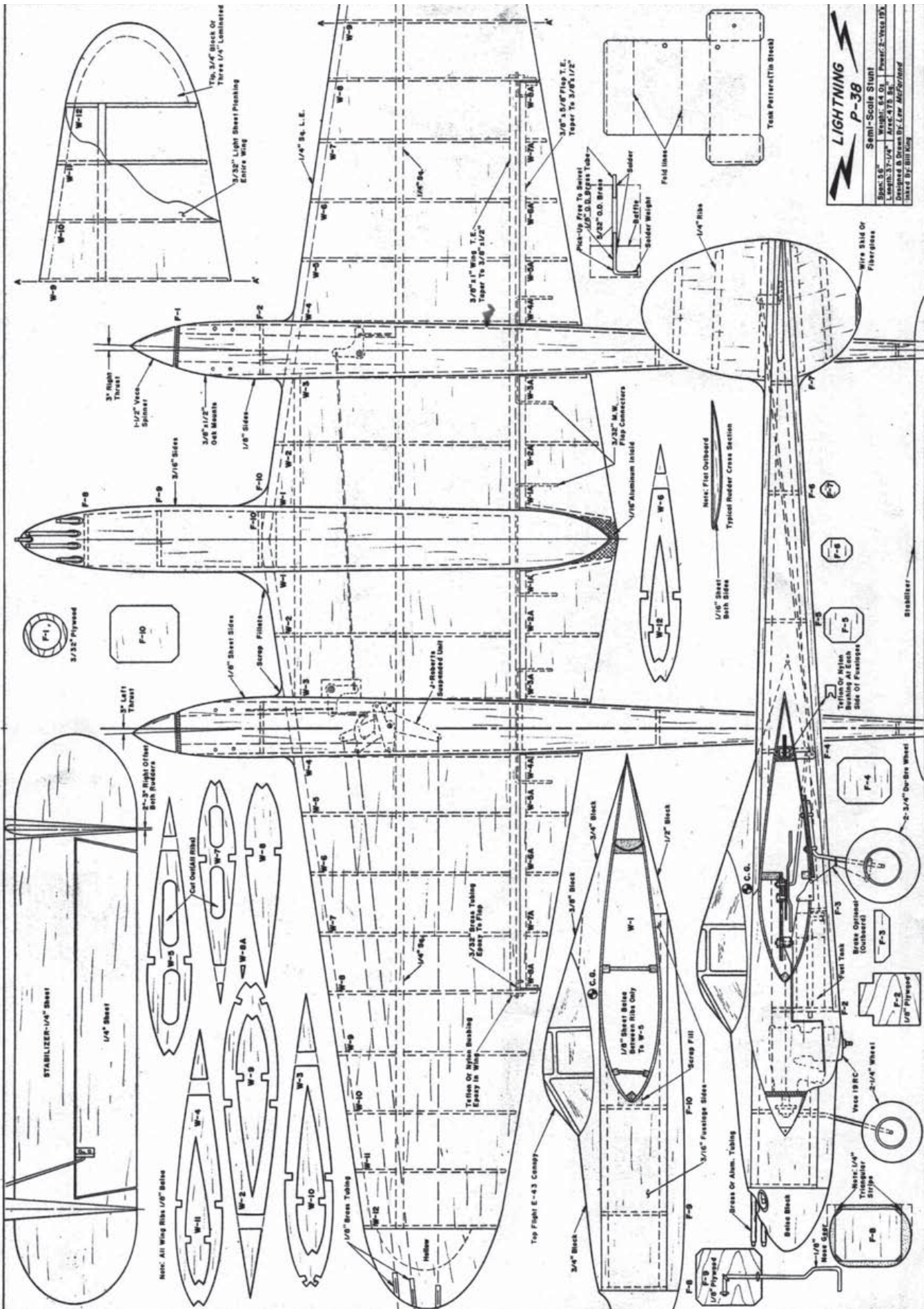
-Ron Burn











LIGHTNING P-38			
Semi-Scale Stunt			
Span: 5'	Wing: 64"	Wing Area: 175 sq. in.	Wing Area: 175 sq. in.
Length: 3'-10"	Wing: 41.5"	Wing Area: 175 sq. in.	Wing Area: 175 sq. in.
Designed and Built by Lew McFarland			





## CLUBS



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Ah Springtime! Ah warm weather! Ah flying! Ah-choo!

You'll most likely be reading this at that one real long red light on the way to the flying field now that it is May (or if you get this by regular USPS - June!) Time to fly! Yee-ha! And while the club meetings are an important diversion during the long winter building season (if you are a Southern hemisphere reader - stick this article away for 6 months and then read it. Sorry.) the club, and its regular meetings and activities, can also be a mainstay of your flying season. Now I am making a big assumption here that flying precision aerobatics patterns one after another after another is not something you do without a break once in a while. So what else do you do related to flying to get a little diversion and not push yourself over the edge where your practice session becomes a chore rather than a delight? I suppose you engage in the usual BS sessions with the other flyers (my condolences if you fly alone because you're the only flyer in 50 miles - I do know the feeling as I lived in Idaho Falls, Idaho for a while. Control line was mighty thin out there!) But, what else? Hopefully, your club has planned some activities for the summer: a contest? a fun-fly? some kind of specialty event such as a picnic?

I know that this will sound kind of funny, but now is the time to start

thinking about what you'd like to do next spring and summer. This fall will be too late: you'll be winding down to winter and wondering what to build for next year's campaign. So right now is the time to have that thought of "heh, wouldn't it be neat if we..." Too many times nothing happens because we wait 'till its too late to really do a good job. For instance, have you considered having a One-Design contest? This is when everyone starts with the same raw materials and basic instructions and a certain set of parameters (characteristic dimensions that everyone must stay within - "as long as the fin is minimum of 9 square inches you can make it any shape you want, etc.") and builds their version for a combined beauty/stunt/speed(or racing) contest. Often, you can get one of the club members, or a group of club members together, to cut out "kits" of the One-Design. If you are going to be building these kits this coming winter, they need to be cut out in early fall. And you'll need to place your balsa order late this summer. So now's the time to plan!



Here's my entry in our NVCL One Design Contest

I suppose some of you are wondering "why talk about this other stuff? Shouldn't we only be talking about Precision Aerobatics in Stunt News?" Well, that is what we are talking about. A One-Design contest is a great way to introduce members of your club to Precision Aerobatics. In essence you can consider anyone not currently competing in PAMPA contests to be a potential "beginner." So, let's use a simple, fun, contest format involving the Beginner's

(or perhaps even simpler) Pattern to start them down the path to control line joy. People who realize they can win the contest by winning beauty and speed (or racing) and still flub the stunt pattern aren't going to be intimidated by it nearly as much as if it were the single event of the contest. They'll be more willing to take a shot at it and might even find out that they enjoy flying stunt! Ta-da! New flying partner! In our club over the years the one design planes got passed down through the membership and they ended up being great stunt trainers. They frequently got demolished many times in the service of raising a rookie.

Hmm. What else could your club do as a bit of a diversion?

Hey, have any of your clubs done the "road-trip" thing? If it's a good story, how about letting the rest of us know about it. If it's a bad story, even better. If it's a story that ended up with pictures on the cover of one of the super-market tabloids, fantastic! We want to hear about it!

Okay, last topic: did you volunteer to help out on something? Did you offer to organize one of your club's summer events? Did you take your turn on the lawn-mower? A club needs to be a give-and-take to be successful. Too often it seems like a give-and-give from some members and a take-and-take from others. We have way more than enough "takers" in this life. Make sure that you are one of the "givers."

-Scott Richlen



Soon as I finish mowing I get to fly the bomber.... b.b.b.bomber....b.b.b.bomber



## CRASH REPAIRS



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A crash of any significance is always sad, but many times you can get something from it that you didn't expect. An example is the Stuka repair we did for Rich Giacobone.

After the crash, Rich was pretty depressed. I told him we needed to wait until we could assemble a crew for a full day in my shop. After a long wait, we got the crew, the Stuka, and repair supplies together, but Rich was not convinced that he'd ever get to fly his Stuka again.

The crew—John D'Ottavio, Brian Manuet, Rich, and I—really had our work cut out for us. The wing was a mess, the tail was in several pieces, and

even the canopy was shattered. Rich had followed my advice—Save all the pieces!—and just like a big jigsaw puzzle, it started to come together.

About halfway through, Rich started noticing that this or that was a bit crooked, and later, when we got the ship to the field for its test flight, he still seemed hesitant but finally put it in the air. Even though the tail in the Stuka was slightly canted, the ship flew just fine. Sometimes a little extra slop in the tail horn will help neutralize something that's a bit out of alignment. We all thought the ship flew better, and Rich was comfortable with flying it more aggressively. I recorded the look on his face on video—he was thrilled, and the whole repair crew celebrated.

Flying any repaired ship before doing cosmetic paintwork to be sure that the repair is sound is cheap insurance, in case there's some hidden structural damage. I wait for a very windy day and hammer a repaired ship through a pattern before doing any cosmetic work. Brodak dope is very easy to repair and match, but if you've mixed a custom color, be sure to make enough in case you ever need to do a repair in the future.

Rich waited to do the cosmetic paintwork on his Stuka—which he did quite well—and that ship is still one of his favorites. He's now a firm believer in doing repairs—maybe someday you'll be a believer, too.

-Windy Urtnowski

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### Brain Fade

I was recently reminded that I had promised to give all the secret magic numbers behind stunt design. I thought I

had already written this sort of article - but it turns out it seems to have gone missing somewhere between my brain, the iBook, and Stunt News.

### The Numbers Game

I am hesitant to continue to propagate the "magic numbers" school of stunt design. The basic idea behind magic numbers is that if you know all the right dimensions/ratios, you will be guaranteed to have a good airplane. So designing an airplane becomes an exercise in attempting to slavishly reproduce the gross measurements of a known good design and thus be guaranteed to have a NATs winner. If it were only that easy! Many of the typical measurements can easily be changed by 10-20% either way at almost random, and it will be close enough. It's the DETAILS that matter, not the gross characteristics.

However, it had better be within 20% of the right starting point, so I will try to go through the basic characteristics as a starting point, with some cursory comments on why they are what they are.

Everything following is based on the use of a modern piped 40-76. This type of model has been ubiquitous in US competition in recent years and hasn't changed greatly since people were running ST46-ST60, and the same models are known to be pretty good with 4-strokes and even (recently) electrics, so it will give a good baseline to start from.

I would also note that I wouldn't bother to scale up or down between a 40 and a 76. Most of the planes today can be flown with any engine in this range with hardly any difference in the performance. This is because even a "lowly" 40VF has enough raw power to fly the airplane. All you are really doing by changing engine sizes is changing where in the power

band it has to run. If you don't believe me please ask Mr. Walker or Mr. Rush to demonstrate.

As a final caveat before I go into the details I once again emphasize two key points - these are only my opinions and everything I know is the product of others. For the most part I am just building and collecting things discovered or developed by those that came before me.

### Weight

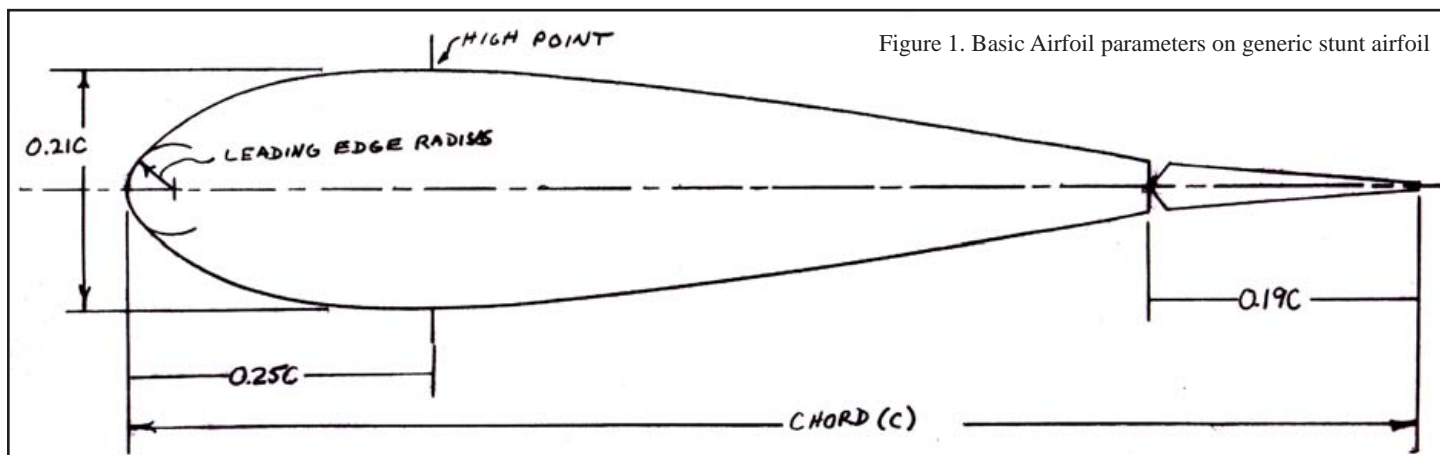
With all the current hardware (engine/header/pipe, tank, control systems, etc) and with any sort of decent paint job, the airplane is almost certainly going to weigh somewhere more than 56-58 oz. That's the dead bottom end. You have to figure on something like 22 oz of hardware, and maybe 10 oz for finish. That's 32 oz. right off the bat that you can't realistically do much about. Subtract this from the low-end weight, and you end up with only 24 oz left over for structure. That's not much at all for the kinds of loads these airplanes have to take.

Yes, you can make them slightly lighter if you are very careful or if you leave out a lot of parts. But for practical constructions methods you will be hard pressed to do any better.

In real life, most people have trouble getting them below 60, and many are WAY more, into the mid 70s. Not to worry - that's not the showstopper it used to be with 4-2 break motors. These engines can pull a much heavier model than you think.

The key to this capability is the combination of a low-pitched prop spun by an engine with both a lot of breathing room at high RPM, and the ability of the pipe to apply control.

Vertical performance is simply not an issue. It will get to the top of the circle at any



reasonable weight with these engines.

Turn performance amounts to avoiding wing stalls at competitive turn radii. If you have enough lift to pull the airplane around the corner tightly enough (not 5 feet, see previous columns!) that's sufficient.

Of course with lift, comes drag. The more you have to lift the more drag you have. In corners, this drag wants to slow the airplane. Slower means less lift for a given angle of attack, or alternately, more angle of attack to get the same lift. At some angle of attack, the wing stalls, and then you are done, that's the limit.

The primary performance improvement we get from our current super-power engines (compared to Foxes, ST46's, etc) is that they resist the speed drop in the corners better. This permits you to turn a given radius at a lower AoA, or if you prefer, turn a decent corner at MUCH higher wing loading than in the past, with essentially no penalty.

The old "rule of thumb" back in the good old days was that a wing loading of 12-oz/square foot was considered the absolute maximum for competitive performance. Now, it has been pretty conclusively demonstrated that you can get NATs-winning performance with upwards of 15 oz/square foot (Fancher, '95 and '00) - all because of the greatly improved effectiveness of the engine.

### Wing

Given the essentially inevitable weight range of 58-65oz, and a reasonable with loading range of 12-to 15-oz/square foot you get target wing area range of something like 640 to 700 square inches. As it turns out, that's about what everyone is building - probably no coincidence.

Of course, this wing area includes the flaps. The flaps are just a section of the wing that happens to move. I know that several smart people (Al Rabe, most notably) design their airplanes and list their wing areas without the flaps. There's absolutely no problem with that as long as you are consistent, but most people use the full-scale engineering convention of including the flaps as part of the wing.

Within the range of wing areas, you can play around with various combinations of airfoils and aspect ratio.

The basic characteristics of the airfoil that are important for our purposes are the thickness the position of the high point, and the leading edge radius. See figure 1

for a reference of a typical current airfoil.

The chord (C) is the total length from leading edge to trailing edge. In the figure the high point position is 0.25C or 25%, and the thickness is 0.21C or 21%. There are varying ways of discussing the leading edge radius. It could be expressed as a fraction of the chord like the other parameters, but I think the absolute value (in inches/cm) is actually more critical, because I don't think you get the same effects as you scale the whole thing up or down. A 3/8" LE radius does about the same thing on many different size airfoils, or so I believe.

Most current airfoils have thickness ratios of around 21-24%. Mine is ~25% and I am convinced it's unnecessarily thick. Compare this to a Nobler (which seems clearly too thin) at ~16% depending on which version and where on the wing you measure.

The decision inside this range is a matter of opinion. The thicker it is the more wing loading you can tolerate, but the more power you are going to have to run in level flight (because of all the parasitic drag). Thicker also means a larger ratio of parasitic drag to induced drag - so you get less change, percent-wise, in the available power during turns. This leads to less change in the speed than you would get if you had a very "clean" airplane. This was a trick back in the ST46/60 days when you couldn't count on nearly as much help from the engine. A lot of current designs are only slight modifications of the previous generation so some of us just probably haven't taken full advantage of the power characteristics yet.

The leading edge radius is fairly important. Too small a radius (pointy) and what will happen is that the air will try to separate from the surface suddenly because it's trying to go around what amounts to a sharp corner, and you will stall abruptly and at low angles of attack. This is one of the big issues with airplanes like the Ringmaster, the Zilch's, etc.

If it's blunt it almost doesn't care what the angle of attack is, at least around the leading edge. The air "sees" the nose of the airfoil about the same way no matter what the angle of attack is. Therefore it doesn't change its characteristics much as you maneuver.

This is of course a very simplistic view of a very complex phenomenon, but it seems to be functionally useful.

I have been using roughly 1/2" LE radius at the root, and about 3/8 or slightly larger at the tip. I wouldn't go much below 3/8 in any case, but some people are down to maybe 1/4" with no apparent problems. Depending on where you put the high point it can be difficult to get a tighter radius and still have a "fair" surface.

The position of the high point has been a point of debate for years. Al's "car hood" wind tunnel experimented with the idea of making sure the shape of the aft part of the fixed portion faired well into a deflected flap, which led to a fairly far aft high point. It seemed to work as he expected. Ted went exactly the opposite way, with some airfoils that, when I first saw them, looked like he set a beer can down on the paper and traced around it, with a very blunt LE and a far forward high point. It's my opinion that this has been a significant factor in the "linear response" feel that has characterized a lot of the West Coast/Imitation style models. The downside appears to be poor penetration when turning back into the wind, which is something that can be mitigated to some extent with engine and prop magic.

The actual shape of the airfoil, other than these parameters, has been long discussed in low tones, with mystical incantations like "NACA 632-0021", "pitching moment coefficient" and suchlike. Certainly I have wasted endless hours going over airfoil polars looking for that magical airfoil insight that will finally beat Paul. David, and Ted. For some modeling applications (like high-performance gliders) it's actually quite important to get exactly the right profile. For stunt it seems as if tracing the edge of your shoe is as good a way as any. As long as the shape is reasonably "fair" I'm sure it will work pretty well, and a lot of our construction techniques render any attempt at airfoil analysis completely pointless.

If you must have an "established" airfoil, the majority of the known good designs use an airfoil that is within a pencil line width of the appropriate NACA "00xx" series where xx is the thickness ratio. Just scale it to the right size, chop it off where the hinge line goes, and slap a flap on it.

-Brett Buck





## ELECTRIC FLIGHT



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### Watt's Up Everyone?

I've been talking to Rudy Taube, out on the West Coast for some time now, and he is a very interesting and knowledgeable model airplane enthusiast. Rudy has been deeply involved with real aircraft most of his life, and he has a deep passion for model aviation as well. So much of what he knows in aeronautics has very useful application in our sport. He has helped me over these months to understand flight theory, and how things function, and helped me to see things from a full scale pilot's perspective. Rudy taught aerobatics to pilots of full scale aircraft, so he knows what works and why it works in that realm. He flew F4's Phantom Fighters in combat missions while touring Vietnam, which is interesting because I worked on the electronics of that bird in Vietnam, as well as in Germany - where nuclear weapons were strapped to their bellies at Bitburg Airbase - but that is a whole other story for some other time. We must have crossed paths somehow, though, without knowing, and now our paths have crossed again. I think that is fascinating. Rudy is a member of the KOTRC CL club in Southern California. (I'm jealous because it is about 80 degrees where he is and I'm enjoying a New England snow storm, at 28 degrees, back to back from a previous storm - it is March 18th and I thought I'd be flying this week - fat

chance now !) I won't be flying until April.

I decided to ask Rudy a few questions and get some of his "takes" on electric control line.



**WILL:** How many years have you been flying?

**RUDY:** I have been flying models for over 40 years. Like many other CL "retreads" I started in CL, then wandered into the world of R/C for many years. Mostly 35% Scale Aerobatics and pylon racing. Last year I returned to my roots and started flying CL again.

**WILL:** Over the past year you have helped me with aircraft design, and flying questions. What is your full scale flying experience?

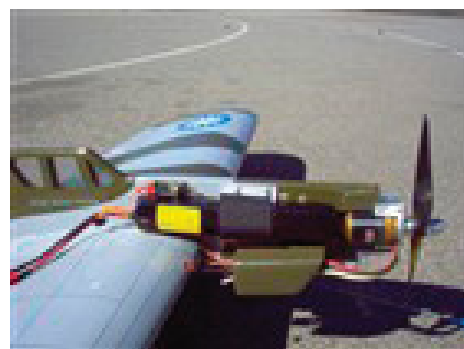
**RUDY:** I worked my way through college flying cargo at night in C-45's. I flew F4's in Vietnam, then flew for the airlines after the war. I also taught aerobatics in my Pitts S2A. I feel very fortunate to have had one of my careers be in aviation. There is a lot of cross over, both ways, between modeling and full scale flying.

**WILL:** Why did you start flying electric models?

**RUDY:** The opportunity to fly CL in the small park 2 minutes from my home, rather than drive 1 hour to the club flying field made going to electric power an easy decision. Another reason is that I had been flying with electric power in R/C for the past several years and had enjoyed its many benefits; quiet, reliable, controllable, repeatable, environmentally friendly, smooth power. Your column showed me that CL electric had arrived and that there were viable systems readily available to get started with.

**WILL:** What are you flying now?

**RUDY:** I have 63 flights on my Brodak P-40 ARF with electric power. I'm just starting to fly my Vector ARF on electric power and it looks like it will be as good as, or better than the P-40. I am building a scale CL electric that should be ready this summer. ARF's make it very easy to get back into CL and also to get started in electric CL. My profile P-40 on electric power is an excellent flying airplane. It's thick airfoil and 560 sq. in. is perfect for electric power. I built it completely stock (except for CF push rods) just to demonstrate to my flying friends how easy it is to convert to electric. Using James Ehlen's excellent motor mount makes for an easy conversion.



Of course, the ideal plane would be one that is purpose built for this type of smooth, vibration free, power. These will come in time. But for now, to get started and still be competitive, a converted IC design will do nicely. Will, you are too modest. I do not think you have told your readers that you have won in Advance at contests with your electric Cavalier and Classic Gieseke Nobler, over the last several years. (associate ed note: I wasn't modest enough to leave THAT comment out - and by the way I have been bumped up to 'expert' level starting year 07) As you and Bob Hunt have demonstrated, with a little effort it is easy to take several ounces out of the front of an IC plane conversion.

**WILL:** What is your current set-up?

**RUDY:** Like you, and many others, I am using what has become the 'standard' CL electric combination. This is perfect for most of the CL planes we all fly. For lack of a better term, I call them Classic size planes. Somewhere between 500 and 630 sq. in. wing area, with a 'take off weight' of 45 to 65 ounces. Please remember to add 6 to 7 oz of fuel and tank weight to your IC powered planes for a fair weight comparison. I am using

this electric power system on both the P-40 and the Vector 40.

Anyone interested in trying electric CL may want to consider the well tested system below. It is turn key, easy to set up, readily available, and very reliable. This motor, controller, and battery combo is used by many of the pioneers of electric CL, including (in chronological order) Walt Brownell (associate ed. note: who was the first to use it in competition), the team of Bob Hunt/ Dean Pappas, Will Moore, Linheart Smith and I am sure many others. (I think Mike Palko used a Plentenburg motor with a Zigras timer.)

#### Electric Power System

Motor: AXI 2826/10 outrunner, 6.4 ounces

Battery: Thunder Power 4S2P 4200 mAh 14.8volt, 13.0 ounces

Controller: Castle Creations Phoenix -45, 1.5 ounces

Timer: JMP - 3rd generation gradual 3rd speed (3 grams) negligible

Charger: Thunder Power TP-1010C (New-recently released)

Balancer: Thunder Power TP 210V or TP 205V

Prop: Bolly 11X4 3B from Randy Smith @ 11,200rpm (associate ed note - many props work)

Lines: 62 feet eye to eye .015 (ed. note - up to 66 feet eye to eye)

Spinner: Tru-turn electric or 7/8 prop nut for good cooling

WILL: Why do you prefer the JMP timer?

RUDY: It does everything we need. With a little practice it is very easy to program, especially with the inexpensive, homemade piece of test equipment you showed us last year.

We can set a time for a low idle while we go out to the handle, then fly with an initial flight speed, then a flight speed step program that keeps the power to the motor uniform throughout the flight, compensating for the normal slight decrease in battery voltage. My last lap is the same as my first lap. Near the end of the flight we get a very useful '2 blip' warning that tells us in 7 seconds the motor will stop. Setting the total flight time to any length of time we need is very easy. We can also have retract gear on board with the timer retracting it after

T.O. then putting it down just before landing.

WILL: Do you have any hints on battery care?

RUDY: That is a whole topic by itself! There are other experts out there that can answer this better than I can. All I can say is: just do the basic safe things the experts do - always use a balancer while charging. Use a high quality charger like the Thunder Power 1010-C. This charger not only has you use a balancer, but it also has a DATA port with a feedback loop between the battery and the charger that monitors the charging process and shuts down the charger before any trouble with a cell causes harm to anything. I like this feature a lot - I've learned that having extra backup supports good safety.

I was talking to the owner of Thunder Power the other day while visiting the factory, and he told me that when using the above charging system, I could charge my current generation TP batteries at a 3C rate. (associate ed. Note - 3C rate means Rudy can charge his batteries at a rate 3 times the capacity of the battery - a 40000 mamp battery could be charged at 12 amps [3X4=12] - cutting down the charge time to about 20 minutes) I have not been brave enough to try it yet - I'll keep you posted. He also mentioned that the batteries are best stored at around

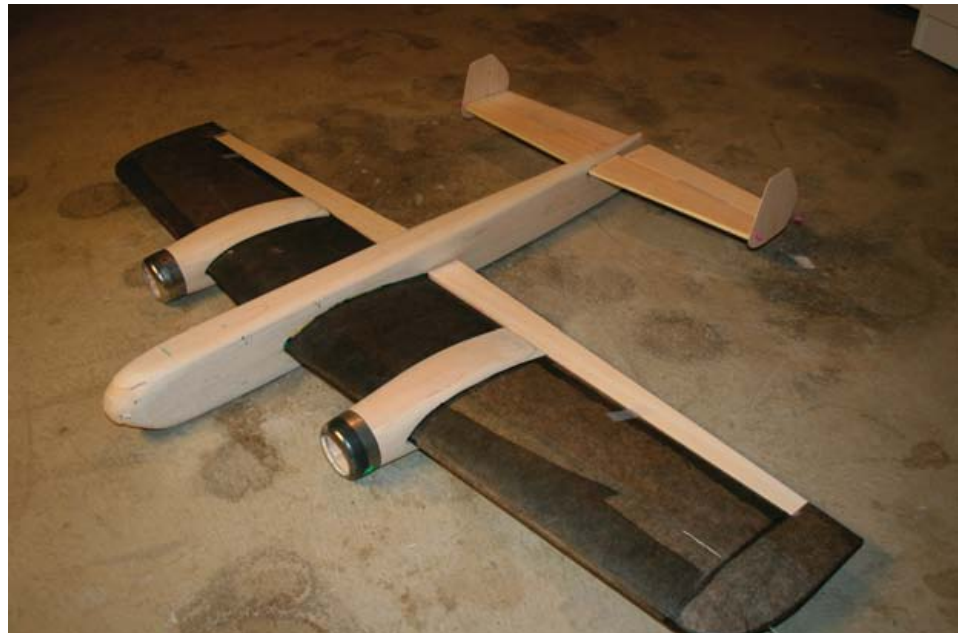
that our batteries work better when they are warm - around 110 F.

Also, with the TP 1010-C charger and their balancers, you can charge TWO (2) batteries at a time. This is a big help at the field. I only need 4 batteries to get lots of flights per session.

WILL: Do you see any design changes to our CL planes due to electric power?

RUDY: Pilots like Mike Palko, Kim Dorehty, and the Europeans, are already showing us the way with their purpose built light electric aircraft. The fact that we can build our planes much lighter now will allow our wing loadings, and power loadings to be as light or lighter than IC powered planes.

Most classic designs had to be slim, with relative thin airfoils because of the very weak engines - like this Fox 35 etc. of the day. This limitation is no longer there. I think we will see more designers thinking outside the box, as they realize the design advantages of using electric power. We now have plenty of extra power to drag around almost any scale model. Linheart Smith's big, beautiful blue Bearcat flies perfectly with the electric system we mentioned. We can have different moments, if they prove to be better, because of the light weight motors up front, and the ability to mount



3.8volts/cell. This is about 15.2 volts for our 4 cell batteries, and it is about what they are after a flight. I now charge my batteries the day before flying, instead of right after I fly. He also reminded me

batteries anywhere that CG dictates.

Twins, like your new WWII semi scale design, and Bob Hunt's great looking sleek twin, will become very popular. Electric power solves some





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twin problems. Like you and Bob are doing, we can locate the batteries in the fuselage, thus keeping the motor nacelles in a scale shape and size. The twin can look very clean without an engine or muffler hanging out, etc. It also assures us that BOTH motors will run at the exact same speeds (if that is desirable) and shut down at the same time (because we are using one JMP sequencer/timer to operate both motors). IC twins can shut down at different times, causing asymmetric thrust problems. Electric also allows using the optimum compensation for torque and P factor by easily experimenting with rotation direction of each motor whether in sequence or counter-rotation.

I think we will see more scale planes in electric. They are already flying them in Asia and Europe. I do not think any of us as a kid looked at the airplanes hanging from the ceiling of the hobby shops, and pointed to a non-scale airplane and said "That's the one I want to build" I remember looking longingly at a beautiful red 'Little Tony' CL scale plane, and thinking someday I will build one like that!" Like many of us "retreads" we are used to flying R/C scale/semi scale airplanes that fly every bit as good as non scale planes. We fly CL aerobatics, and so I think we will see more aerobatic planes like the Extra, Edge, Cap, Dalotel, etc. Electric power will allow these planes to be close to scale and fly as well as the traditional slim non scale models we see today.

With "fuel proofing" being a thing of the past we will see lighter finishes using less aromatic paints. The panel lines on my P-40 were done by simply using a Sharpie pen with no overcoat needed.

CL flyers are among the most innovative and talented group in modeling. I'm confident we will see many imaginative design ideas in the future that take advantage of electric power's strong points.

(END of Interview)

Thanks Rudy for your comments. Those who fly electric fly for as many reasons as there are pilots. This electric trend is exploding world-wide. The Japanese had their "NATs" and about 8 entrants chose electric power, some reaching the top 10. I think things are going to take off exponentially. That will be good for this sport, and whether you are a die hard IC guy or not does not really matter. Electric flight has its place.. And that does not mean I feel IC is bad - it is not. Electric flight is another power system choice that seems to make good sense. People are getting more and more green planet sensitive and with good reason. This is not political - it just seems to be keeping pace with the times. Let us enjoy the ride together, shall we?

Enjoy the flying season !

-Will Moore

'58 NATs photos courtesy of Don Ogren



Bill Werwage at the 1958 NATs

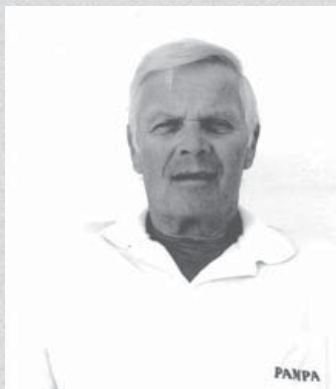


Charlie Lickliter's stuntship at the 1958 NATs



Bob Randall's Gobbleschwantz, Don Ogren's Detroit, Charles Mackey's Lark at the 1958 NATs

## FLYING THE MANEUVERS



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Well, spring is just around the corner. I hope what you've been building all winter is now done or close to it so you can put some air under it and see if all that work is going to pay off. Hopefully, it will.

I have added two new planes to my hanger this winter. I have a new "Pathfinder profile; just finished it up this week. Not yet flown, it's powered with a Super Tigre 46, just back from Frank Bowman. The other plane is my third Gypsy. I scaled the plans up by 10%. It has a 62 ½ wingspan at 692 sq. in. It's powered by a Super Tigre 60, and will weigh 66 oz. Not yet flown, but I hope soon. The weather here in Florida has not been very good for flying. Mostly too much wind. I hope it gets straightened around, because the King Orange contest is only 1 week away.

With the contest season coming up, maybe we should go over the things to be done so you are ready to compete. The first thing is to show up to contest early enough to get in a needle flight. This does not always work, but most of the time it does. Attend the pilots meeting to get the ground rules and whatever is special to that contest site.

After the pilots meeting, get your lines on the plane and get pull

tested.

Now go and check the score board to see when you are up to fly in both the first and second rounds. Also, see who the 3 flyers are in front of you. Why three? Because 1 or 2 of those flyers may pass or crash or something and you may have to be ready to go in a minute. That's usually not a problem, but it did happen a few times last year. Now, get back to your plane and check everything over you can think of. Be sure everything is in place and tightened up. Get your line cleaner out and do a final clean up of your lines.

If you have a long wait before your flight, get a chair and sit down and watch the competitors' flights. You may see something you like, or see some things you want to be sure you're not going to do. Make a mental note of it.

When the third pilot is flying before you, be sure you have a pit man available. Go over with him the procedure you want him to follow. Fill up the fuel syringe with the proper amount of fuel. I don't like to fill the tank until just before the flight. When the pilot just before you is in his pattern, it's time for you and your pitman to move up next to the circle. When that pilot is into his overhead eights, it's time to fill the tank.

The pit man should now be at the handle. When the pilot before is done flying and lands with his plane coming to a stop, it's now time to move on to the circle. The pit man to the center, and I take my plane and fliteline box to the spot where I will take off from. That would be a short way past the judges. My fliteline box has about everything I should need in case of an emergency.

While the pit man is coming to the plane, I am choking the engine (either a PA .61 or Super Tigre 60). Both of them need to be pretty wet. I now hook up the glow plug liter, and this is the time to signal the judges for start. If you have done everything right, a quick slap of the prop backwards and it should be running. (You've used up 5 seconds) But if it didn't start, 5 or 6 hand flips should

start it; but if that didn't do it, grab the starter and crank it for 10 to 15 seconds. If it's still no run (you have now used up 30 to 40 seconds) signal to the judges for an attempt, and move off the circle. Take everything back to the pits and find out what went wrong. Usually something as simple as a glow plug. Some people put a lot of new stuff on their contest plane just before a contest. But if I've been practicing with this plane a week or two before the contest and it has been performing very good, I don't want to change a thing.

Well, by now 2 pilots have put up their flights and it's time for you to make up your attempt. Now we go back to fire up the engine. Put the flite box out on the edge of the circle. Now, walk out to the handle and on the way out, make a final adjustment to the hat and sunglasses; pick up the handle and move the controls to check up and down, and motion for the pit man to turn her loose.

Now we're rolling and picking up speed. At about ¼ of the circle, the slightest bit of up pressure and the plane is airborne. Continue a very shallow climb so you cross in front of the judges, face high. Now, you must strive for total concentration for the next six or seven minutes. As the motor quits and you land the plane (no bounces) it comes to a stop. The pit man will pick up the plane and as you exit the circle, give a wave and a thank you to the judges. Look and act like you've done a good job.

Reflect on your flight and make any mental notes for any improvement for round two.

Practice and fly good.

-Owen Richards





## PERSONALITIES



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Featuring:  
John Paris and his family (AKA  
Team Paris)  
Clio, MI

one like John Paris. John is one of those lucky enough to have kids who enjoy flying C/L as much as he does and a wife who supports his hobby and attends contest with him and the kids.

I had the pleasure of meeting John and his family at the 2006 NATs. I was helping Allen Brickhaus with the beginner event and was amazed and pleased to find both of John's children entered in the event. I thoroughly enjoyed watching them flying their Super Clowns. His wife was also there proudly supporting them in the sport they all dearly love. I wish more fliers would bring their families to the NATs. Even if all they can do is fly in circles, bring them to the NATs. The experience and fun they have in the beginner circle is priceless.

By occupation John is an engineer and he and his wife, Sook-Hi, live in Clio, MI. He has two children, Grace and Michael. His handle on Stuka Stunt is parisjm and on Stunt Hangar he goes by his name John Paris.

John has been aeromodeling for



Team Paris, Michael, John, and Grace.

SIG Super Chipmunk. When asked what his least favorite model was he replied, "Don't have one. They all can be made to fly well given enough time". His favorite power plant is the Fox 35 and his least favorites are 1/2a engines.

John's most memorable moments in aeromodeling come from practicing in his back yard (lucky man to be able fly in the back yard). He says he once did a set of loops with his Chipmunk that he followed so well that it appeared the model was rotating in the center of his vision.

Currently he is working on an RC project that has been on the shelf for a while. He will follow this



John Paris and his beautifully finished SIG Super Chipmunk.

Everyone that is acquainted with me knows that I am single and have no wife or kids; however, if I were to have a family, I would like to have

30 years and like many of us was inspired to enter the hobby by his father. He enjoys sport and stunt flying and his favorite model is the



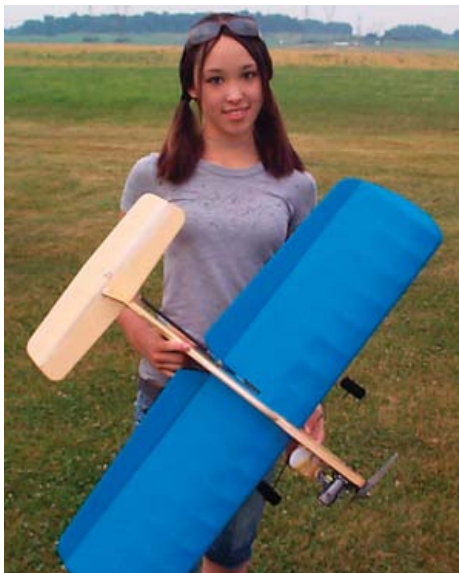
Michael puts on his game face at the NATs beginner competition.

with a throttled Skyray 35 for SIG Carrier later this year. His future aeromodeling goals are to keep having fun and to inspire his children to enjoy aeromodeling as well.

What John likes most about aeromodeling is taking raw materials and creating something that flies. But, although he likes building, he dislikes finishing. His motto is: "Fuel proof is good enough for me. Color is pushing the limit." I don't know John, that Chipmunk of yours looks pretty colorful to me!

Like many of us, John enjoys the outdoors. I guess that is one of the many benefits of flying models. It gets us all out into the fresh air. I guess all that fresh air helps balance the hours we spend confined in our building rooms smelling dope.

John is certainly doing his part to introduce youth to C/L aeromodeling; however, he does not think that today's youth appreciates the magic of flight as much as previous generations. I agree, when I was a kid I was awe struck by aviation and aviation pioneers. Kids today do not know Charles Lindberg, Chuck Yeager and Scott Crossly. I guess all things do change, but I do hope that C/L will be around for some time to



Grace with her Super Clown at the NATs.

come. Lets do our part to make sure of that.

The contest season is ramping up and I will attend as many contest as feasible this year. I am anxious to see all my friends and meet new ones. If

# *The Playboy*

CLASSIC LEGAL

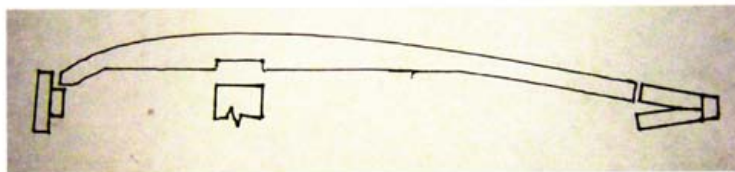
As flown by Norm Whittle in the 1968 NATS



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-Louis Rankin





## SAFETY



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This month we have a guest columnist in place of Ron. That lucky individual is Ken Gulliford of "Ask Ken."

### The Ups and Downs, and Ins and Outs by Ken Gulliford

Safety in control line modeling has for the most part been of the word-of-mouth or anecdotal kind. Horror stories of severed or sliced body parts and appendages are in great abundance where control liners gather. If you doubt this, the next time you're in a group of like minded flyers, show them a favorite scar on your hand or finger followed by the immortal, "Hey, did I ever tell you how I got this?" The ensuing "Bull Session" will take you to places you never wanted to go, with each story topping the next, each flyer having a story of their own to tell, and each showing scars located in ever more embarrassing places.

Safety has been defined so many times that just the word Safety, said three times clearly and in succession, has been known to induce, sleep, stupor, or a state of light hypnosis. Safety has been compared to "Common Sense", and something that the Boy Scouts promote namely, "Being Prepared". For each of

us Safety has a slightly different meaning. We all can envision the Monday-Morning-Quarterback Safety Guy saying, "Well heck, there's your problem. If you'da done this, instead'da doing that.....". Those hard-learned lessons are emotionally expensive, because you feel pretty stupid listening to the Safety Guy tell you what you already know. Likewise, Mr. Know-It-All Safety Guy preys on your fragile ego, expounding on things that are easy to understand individually, but remained totally unrelated in your mind until they all came together for, "The Accident".

So far this year, in the areas where you can fly in the winter, we have had a real festering, seething, epidemic of hooking up the lines backwards. We have all done it at least once, and we will likely do it again. It is a very common mistake. Those statisticians in the group will tell you that you have 50/50 odds, or one in two, that you will hook-up your lines incorrectly either at the handle end, or on the plane end. The optimist standing next to the statistician will say that you have the same odds of doing it correctly. Glass half-full, glass half-empty, it doesn't really matter how you view the situation if you re-kit your pride and joy after a bewildering launch into pseudo-acrobatics, followed by an unintentional one-point vertical landing. However, it can be avoided, and you can swing the odds in your favor.

Let's hear from the flyers themselves about their "Accident". I have to tell you, this was like asking a kid about his favorite pet, just after it got run-over... Thanks Mr. Publisher for the wonderful tasking.

Bob Smiley was getting ready to put in a round at the recent 57th Annual Southwest Regionals. It was a beautiful day, and people wanted to chat and take pictures of his nicely appointed Walker Impact with its' Piped PA Rear Exhaust .61. Why not, it was a great looking and flying machine, and Bob will take time to talk with anyone. Bob says, "I paint the eyelets on the down line red, so that I can never get them confused".

Asked if he disconnects the lines from the handle after each flight, he answers, "I used to," then he shows off his line handle set-up. "It's a Bank bag" he offers, "I keep the lines and handle set in the bag until it's time to use them" and he turns to show off a couple of more of the zippered Naugahide (or what ever they are) bags in his flight box. "I keep the lines hooked up now". Good idea Bob. At least the odds are even on getting the airplane end correct, now that you have one end correct to start with. So what happened? What did he think caused the problem? Jump to the end of the text if you just can't stand it, or wait for it. Even Carley Simon knows that anticipation makes things better than just putting Ketchup on them.

Mike Pratt (of SIG fame) had a similar mishap at VSC XIX (19). He was sporting a real nice RSM Jamison Special. Heck, I've got a Jamison (doesn't every Old Time flyer?), mine is all yellow silk and fairly pretty, but Mike's was BEE-U-T-FULL. You know that feeling when the whole audience does the collective gasp in a theater, or when the crowd moans at the football game (we know how to do that real well out here in Phoenix), or when you hear the gun go off in Old Yeller or Bambi? Well that was the moment when Mike erased his Jamison on the new asphalt in Tucson. Yup, the lines were backwards. I asked what happened (per my assigned task) and he said, "I didn't think there was anything wrong until it tipped the prop about a foot out of the launch." He told me how he had just put in enough trim flights to know it was going to be a great airplane, and it had not done that before. "I felt the prop tick," he continued, "and fed in just a touch of down, then it took-off. I kept it steady trying to keep it down but, Ahh-Oh, I realized the lines were backwards. I couldn't tell you what happened after that, and it hit the ground at around  $\frac{3}{4}$  of a lap". The sawdust and pieces were still being blown around the circle two hours after the clean up and wake. Mike says that he color-codes his line ends: Blue or Green for the Up line,

and Red for the Down. "You know, I probably would have caught the mistake, if I hadn't done the control check with the plane in front of the morning sun. I wiggled it, but didn't really see it, then waved the release." What happened? What caused it? The same thing that happened to Bob Smiley! But, we'll save that for the end.

Another problem that has the same cause is sticking your hand into the prop on a running engine. Eric Rule whacked his finger at this year's Southwick Memorial, but he can still count to ten using his fingers (with adult supervision) not for lack of trying though. A few years ago, your honorable Safety Guy (me) got his fingertips into the blades after launching a pusher. Probably don't need to draw too vivid a picture for you, but you hold a pusher on the front of the plane, and the engine is on the back.... Eight stitches later, and I was investing in leather gloves. A good friend of mine gave me a fish / meat Fillet Glove. He figured if it kept those oyster shuckers from carving themselves up, then it must be pretty good for starting engines. It was, it took four years, but the razor edged props I use still managed to wear a hole in the tip of the political finger.

We all have had a close call or two, and at this year's VSC John Elias, from Australia, made it to the colonies again for a week of great fun. He also made it two-for-two for the guys from down under. He had professional medical attention applied to his pinky, ring, and political fingertips from an encounter with a carbon-fiber molded propeller, or carbon-fibre if you're from where they speak "Real" English. "It was after I had it started," he said, "I turned my attention to the center of the circle and the wind direction, and let my hand fall by my side. It (his hand) backed into the propeller", he said with a grin, then showed off his set of bandages. "You need to speak with my mate Jeff Reeves, he has a real horror story from last year's VSC!" Mercifully, I never did meet up with Jeff, but there were plenty of guys that wanted to apprise me of

the situation all too graphically.

Props these days are much more sturdy, and much sharper than the wood props of our youth. We use functionally more RPM routinely, and there are more, larger engines in use than ever before as well. Does anyone fly .15s or .19s, or even .09s? Not usually. It's .40s or better, except for those purists that insist on using a Fox or McCoy.35. Of course, there is a contingent of 1/2A flyers, but prop cuts are a necessary part of that method, and don't draw much sympathy from the rest of us. Still, you can get a pretty serious cut from an .049, but it just doesn't create the attention that bone bearing slices do from a "full-size" plane. Remember my measly little old eight stitches? That was a 1/2A. It got me 15 or so times before I could get out of the way, and three of those were bad enough to stitch. OK, so the size doesn't really matter, a cut is a cut. The point is; the props are sooooo much better these days, that we just can't be too at-ease around them.

We have heard about lines being hooked backwards for one reason or another, prop-strikes of one kind or another, and we have been promised that it is avoidable and controllable. The thing is, they are both related to the same cause, and the same way: Lack of Attention. We get so used to things not going wrong, or going the same way every time, that we get complacent and expect that everything will go correctly every time. Bob, Mike, John, Eric, Me, and I'm sure Jeff too, all agree on the cause and the prevention of these mishaps. Most of you do as well!

Bob Smiley said, "Habit is habit, and I broke my routine. I allowed my concentration and focus to wander and changed my routine. I didn't know there was a problem until it was too late."

Mike Pratt said, "I changed my routine just because it was easier to do at the time. Had I stuck to my routine, and walked the handle out to the center instead of picking up the airplane, I would have noticed the controls were backwards. Had I not been in a hurry to get out of the sun on take-off, I would have seen

the elevator go down for up. Don't Change Your Routine!"

John Elias said, "I normally go straight to the handle, but this time I changed my routine because of the new situation. I should have done what I always do."

Eric Rule said, "After 63 years and 10 months I've figured out how not to cut my fingers; I use an electric starter now!"

In the end, Eric Rule and I both had the same thing to say, "I shouldn't have done that, I knew what was going to happen!" and there you have your answer. You know what to do, you know what is correct and safe, and you know what works for you. The military and industry both have checklists for critical tasks. They use them to ensure a set procedure, or sequence of events, to help prevent mishaps. You don't need to have a checklist, although for some of us it would be a better thing, all you need to do is find a sequence that works for you, and use it. Set your routine, don't get in a hurry, don't get distracted, and if you do, start your routine over. You can take an attempt if you're in competition. It's sort of like flushing the toilet anyway, and then you get to start over again all clean and fresh. It's better than having to clean up your plane with a broom, or visiting the emergency room.

-Ken Gulliford





## THE LIGHTER SIDE



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It doesn't happen often, but when it does the results are spectacular.

We're talking about hooking-up the lines backward then failing to notice it 'til shortly after release. The outcome is guaranteed to be entertaining...to everyone, that is, except the guy on the handle, who's now thinking, 'Gee, this doesn't feel right' or perhaps something stronger. Chances are, he'll either stand there dumbfounded or suddenly start hopping around like he's auditioning for a production of 'Riverdance'.

This rare, though usually fatal, disorder is known as 'Connectile Dysfunction'. CD (not to be confused with the more familiar definition) occurs primarily in mid-to-senior-aged males when stress or other distraction occurs at a time when maximum performance is required ('when the moment is right', as it were), such as preparing for an official flight or perhaps wondering if that pending IRS audit will reveal certain 'anomalies'.

The condition, however, is easily treated. One proven remedy is to color-code the end of one flying line plus a corresponding leadout. Assuming that those are then connected to each other, this solution is relatively foolproof. Another method of treating CD involves somewhat more effort, and is endorsed by leading coaches everywhere. First connect the safety thong then grip the

handle, pulling its top end toward the body while at the same time carefully observing the deflection of the model's elevators. Ideally they will deflect upward. Should they move downward (or not move at all) it's a sure-fire indication of Connectile Dysfunction.

In rare cases even these methods may fail to offer the desired level of performance. Emotional stress, poor diet, and/or lack of sleep are factors often contributing to CD. Additionally, the act of consuming excessive quantities of adult beverages the evening prior to flying has been known to have an adverse affect on performance. Having failed to perform a careful check of control surface deflection prior to signaling for release, those afflicted with CD will soon find themselves the center of unwanted attention. Side effects may include nausea, hyperventilation, heart palpitations and a strong urge to take up needlepoint.

In the event of symptoms lasting longer than four nanoseconds, consult your balsa supplier.

(Note: The term 'Connectile Dysfunction' was not an original thought. I'm not that witty. It's a term heard in a phone company commercial during the Super Bowl. And of course I immediately thought, 'Hey, I'll bet I could use that one somewhere!')

-Mike Keville

## '58 NATs photos courtesy of Don Ogren



Don Ogren at the 1958 NATs



Hi Johnson's Stuka at the 1958 NATs



Jim Phillip's at the 1958 NATs



Milton Boos and his wife at the 1958 NATs



## THE TRAILING EDGE



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✓ Call me a relic, call me what you will; say I'm old fashioned, say I'm over the hill...' (Bob Seger; 'Old Time Rock and Roll').

Well, VSC-19 is now history, thus you're probably relieved to see Stuka Stunt forum pages no longer clogged with reminders and updates every other entry or so. However, we're already planning the gala 20th Annual for 2008. Back in '89 we certainly never imagined this thing would last twenty (or more?) years. I'd love to include some comments here about this year's gathering but will defer to others since the column is being submitted prior to the meet in order to cut Editor Tom some slack.

About that A-J Firecat: For some reason, people continue to ask, 'Is the Firecat legal for OTS?' And for the umpteenth time the answer is 'Yes'... under PAMPA rules, which include models having a design date prior to 1953. (GSCB rules require eligible designs to have been kitted or published by the same date. Since the kit wasn't introduced until 1954 there may be some question there.) At any rate, proof of the Firecat's eligibility under PAMPA rules has been widely circulated, most notably via copies of a letter from the designer, J. Robert Smurthwaite (deceased). In that letter, provided by Frank Macy, (source for replica Jim Walker/ A-J products) and available for viewing in the Stuka Stunt

Forum archives, Mr. Smurthwaite clearly states that the Firecat was designed, flown and displayed at trade shows well prior to December 31, 1952. In fact the letter also states that the Firecat pre-dates Matt Kania's Ringmaster, introduced by Sterling in 1952 as the ever-popular S-1 kit. Based on all this, it appears that the Firecat's eligibility for PAMPA Old Time Stunt is a no-brainer. If anyone can show documented proof to the contrary, I'll be glad to print it.

NATs Old Time and Classic: These two unofficial events will be flown to PAMPA rules. Registration will be at the L-Pad Pavilion, 12:00 Noon, Monday, July 9. Should that change for any reason I will post it on the Stuka Stunt forum. PLEASE DO NOT BE LATE. Entry fee is \$10.00 per event. All contestants must first check in with AMA officials at the 'farm house' to receive a name badge. Sign-ups accepted only upon showing that badge plus current AMA license. Competition is Tuesday, July 10. Pilots' meeting at 9:00 or as soon as I can get there after the P.A. judges' training on the L-Pad; first flights immediately after that. We have a stellar crew of judges and other officials lined up. Weather permitting, this should be a good one. Questions?



Who's the tyke on the trike? Little snowbound dude poses with his ride sometime in the '40s. Cute lil' booger, isn't he? Doris thinks he still is. Yep, it's Bill Zimmer. (Love the mittens!)



Here's the late Royal E. (Lucky) Pyatt holding Tom Warden's 'Minado' sometime around 1968 or '69. Site is Whittier Narrows, CA—otherwise known as 'Gopher Gulch' in those days.



This young fellow had a thing for deBolt Continentals; probably still does. Today he's a PAMPA member and President of the Central Arizona Control Line Club: Ken Gulliford.

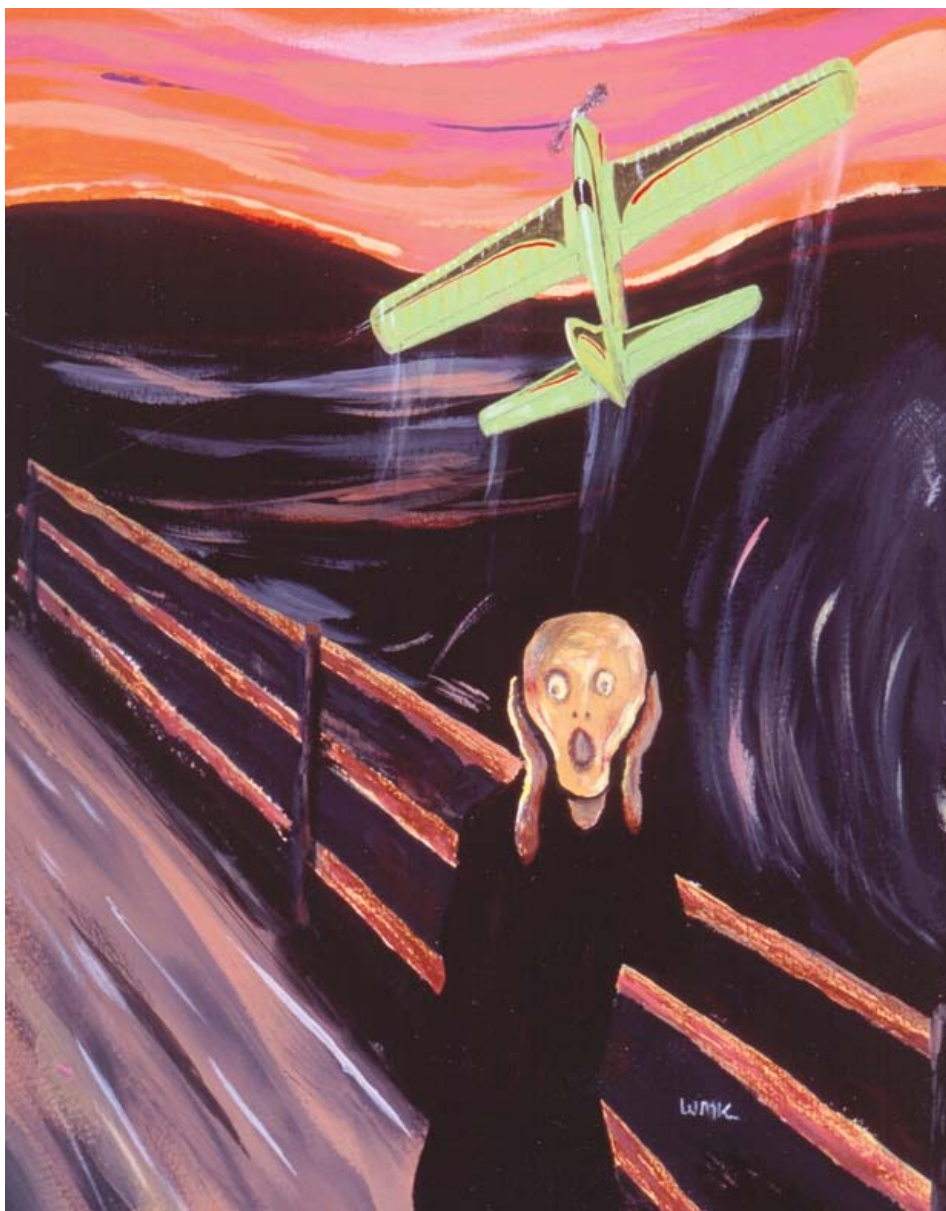


Copy of a copy here; hope it prints. The year is 1946 and that's a Carl Goldberg design with a Forster .29 being held by current AMA District Six VP, Charlie Bauer.

Last winter ('winter' being a relative term in Southern Arizona) I was diddling around with some







Ever wondered why the character in Edvard Munch's 'The Scream' is so uptight? You'd probably scream too if an Argus zipped past your head at 55 mph. T-shirts available; see text.

acrylics and foam board. After looking at a photo of 'The Scream' by Edvard Munch, I thought it might be fun to give the horrified little character a reason for reacting like that. Here's the result. Though it's in black-and-white here, the actual colors are quite vibrant. Then a friend suggested it might be fun to have the image printed on T-shirts, so she found a source and we did that. Want one? They're available for about \$15.00 by going to <http://www.zazzle.com/product/235775338168899832>.

Short Lines: Know who won Junior Nordic Towline Glider at the '56 NATs? 'Chizler' designer Dick (Fast Richard) Mathis, current member of the USA FAI F/F Team

... Same NATs: Junior Stunt winner Dennis Alford (who's still around) also won B, C and ROW Free Flight. Apparently, 'multi-tasking' is nothing new ... Quantum leaps in electric power lately. Appears to be the wave of the future in CLPA, thanks to Bob Hunt, Mike Palko, Bruno Van Hoek, Will Moore, Dean Pappas and others whose efforts are commendable. Having said that, I'm of the opinion that an Old Timer needs electric power like an elephant needs a bicycle. (As always, 'opinions will vary'.) ... That's about it for this issue. In the words of Ryan Seacrest, 'We'll be back....after the break.'

-Mike Keville



## WE HAVE THE TECHNOLOGY



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All About Threaded Fasteners – I’ve had several people contact me recently, asking for information about threaded fasteners. Referring back to my previous column on the subject, I realized that it was written seven years ago. I decided that it was time to revisit the topic – it’s been a long time, people are asking for it, and I know several recent cases of near catastrophic fastener failure. Let’s talk fasteners.

How many threaded fasteners in a typical stunt ship? Take a guess. How many do you think there are – twenty, thirty, what? I counted the number of threaded fasteners in one of my Super Kestrels – forty-two. That number includes the engine (16 fasteners with the mounting bolts), but it doesn’t include the threaded ends on the pushrods (4 fasteners). There are places where I use a few more fasteners than normal, but also places where I use less, so I think that forty-two is probably a representative number for a contest stunt ship. The point is that we use a lot of threaded fasteners in our airplanes. Since the consequences of fastener failures are often severe, we need reliable fasteners. To ensure reliability you need to know what fasteners to use and how to use them. In this piece, my objective will be to provide knowledge about fasteners that you can use to make your airplanes

better.

Screws – Almost all of our fasteners are socket head cap screws. Years ago we used slotted head screws. If you’ve ever had a screwdriver slip out of the slot and gouge up the finish on your airplane, you know why we don’t use them any more. Incidentally, if a fastener is used with a nut it’s called a bolt. If it threads into something else, it’s called a screw. That’s the convention, even though it’s not always followed (we talk about head bolts, not head screws). Our most commonly used screw size is the 4-40. We also use a few 6-32’s (ST 60 mounting bolts) and 2-56’s (small control horns). I’m going to argue that we generally use screws that are larger than necessary. Take a look at Table 1 and then we’ll talk about fastener strength.

Size	Threads per inch	Diameter (inches)	Hex Socket Size (in)	Hole Drill Size	Tap Drill Size	Tensile Stress Area (in <sup>2</sup> )
#0	80	0.060	0.050	#52	3/64	0.00180
#2	56	0.086	5/64	#43	#50	0.00370
#4	40	0.112	3/32	#32	#43	0.00604
#6	32	0.138	7/64	#27	#36	0.00909

The table contains general information about the fasteners that we use. Notice that I’ve included 0-80 screws in my table. That’s because I want to make a case that 0-80 fasteners can have considerable strength and deserve consideration. Tensile stress area is in the table so we can talk about strength.

Strength -- The most important consideration when choosing a fastener is strength. We cannot afford to have fasteners breaking on our stunt ships. With the increased use of threaded fasteners in control systems, this is true now more than ever. There are two ways to increase strength -- use a bigger fastener or use a stronger material. That’s the simple way to look at it. However, being an engineer, I’ve got to use an equation. Please indulge me -- I promise I’ll only use one simple equation. Here goes. The tensile stress load  $P$  to break the threaded portion of a screw can be determined from the following formula:

$$P = SA_t$$

Where  $P$  = the load in pounds to break the screw;  $S$  = the ultimate tensile strength of the material in pounds per square inch; and  $A_t$  = the tensile stress area in square inches. The Society of Automotive Engineers (SAE) rates the strength of fasteners by assigning them to a grade. SAE Grades are ranked in order of strength. Common screws that you buy in a four-pack at the hobby shop probably fall into SAE Grade 2 or perhaps Grade 5, with ultimate tensile strength of either 75,000 or 120,000 psi. Screws in SAE Grade 8 will have ultimate tensile strength in excess of 180,000 psi. Using the formula above, I’ve made up a table to show the breaking strength of various fasteners. Table 2 shows the breaking load for

our common screws when made of Grade 2, Grade 5 and Grade 8 steel.

Remember that the table shows ultimate breaking strength. For reliability’s sake, you would never want to use a fastener in an application that used more than a fraction of the ultimate breaking strength. Even so, isn’t it amazing that a 0-80 screw (Grade 8) has a breaking strength of 324 pounds? I wouldn’t

Screw size	SAE Grade	Ultimate Tensile Strength, $S$	Tensile Stress Area, $A_t$	Breaking load $P = SA_t$
0-80	2	75,000 psi	0.00180 in <sup>2</sup>	135 lb
2-56	2	75,000 psi	0.00370 in <sup>2</sup>	278 lb
4-40	2	75,000 psi	0.00604 in <sup>2</sup>	453 lb
6-32	2	75,000 psi	0.00909 in <sup>2</sup>	682 lb
0-80	5	120,000 psi	0.00180 in <sup>2</sup>	216 lb
2-56	5	120,000 psi	0.00370 in <sup>2</sup>	444 lb
4-40	5	120,000 psi	0.00604 in <sup>2</sup>	725 lb
6-32	5	120,000 psi	0.00909 in <sup>2</sup>	1091 lb
0-80	8	180,000 psi	0.00180 in <sup>2</sup>	324 lb
2-56	8	180,000 psi	0.00370 in <sup>2</sup>	666 lb
4-40	8	180,000 psi	0.00604 in <sup>2</sup>	1087 lb
6-32	8	180,000 psi	0.00909 in <sup>2</sup>	1636 lb

hesitate to load it to 100 pounds. How many places are there in our planes where we need fasteners to carry a load greater than 100 pounds? Not many. I would urge you to consider using some 2-56 and 0-80 screws in your next plane.

The key to using smaller fasteners is to use the stronger Grade 8 fasteners. The catch is that you can’t get them at the hobby shop. I buy them from the following source:

McMaster-Carr





P.O. Box 5370  
Princeton, NJ  
08543-5370

(908) 329-3200

www.mcmaster.com

McMaster-Carr is a huge industrial supply house, but they don't mind doing business with individuals. Their 3700-page catalog (available online) is a good source for many things we need in our hobby. I've gone there for fasteners, tools, bearings, and materials like sheet aluminum, nylon, plastic, and foam. In addition to their huge selection, they offer fast service - normally shipping within an hour of receiving your order. Take a look.

It seems that I'm always talking about Grade 8 fasteners. I usually use them for their great strength, but not all applications call for great strength. Following Windy's lead, I'm using aluminum screws for my fuse mounted landing gear. I might break the screws with a really hard landing, but I'd rather break them than rip out the gear plate. A good source for aluminum screws is:

Micro Fasteners  
24 Cokesbury Road, Suite 2  
Lebanon NJ  
08833

(800) 892-6917

www.microfastener.com

**Tightening Screws --** This is where we get into trouble. It seems that we get screws either too tight or too loose. When they're too tight something bends, breaks, or strips. When they're too loose things fall off. Our problems are compounded by differences in the materials that our screws thread into - a screw threading into an aluminum crankcase can't stand as much torque as one threading into a steel blind nut. There are many ways to tighten screws and I'm going to tell you what works for me. I tighten screws as tight as I can get them with a Bondus balldriver (regular handle, not the T-handle). Torque is limited by the small diameter of the handle and my wimpy grip. This

isn't very scientific, but my screws stay tight and I've never stripped a thread. Incidentally, Bondus has a new line of balldrivers. They've got a little nylon button in the tip that grips the cap screw, allowing you to start a screw with one hand.

An alternative to my method is to use an inch-pound torque wrench. This allows you to tighten screws to accurate torque values. The problem is knowing what torque values to use. You can over-tighten screws with a torque wrench if you use the wrong value. Let's consider tightening a head bolt. This is probably our most critical application because we're threading into the aluminum crankcase. The proper torque value will depend on the thread size, the thread depth, the alloy used, the heat treatment of the alloy, and lubrication. It's not easy to figure out the proper torque value, and engine manufacturers don't usually provide one. Randy Smith is one exception. For his Precision Aero engines, he says to torque the head bolts to 15 inch-pounds and the back plate screws to 12 inch-pounds. These numbers are only for Precision Aero engines. For other engines, you're on your own.

**Keeping Screws Tight --** Keeping fasteners tight is a battle that we've been fighting since the beginning of our hobby. I'm going to talk about thread-locking devices, but first I'll point out some places where they aren't needed. Thread-locks generally aren't needed on head bolts, back plate screws, and the muffler or header screws on our engines. This is because aluminum expands more with temperature than steel does. As the engine comes up to operating temperature, the screws get tighter and no thread-locker is required. In addition, no thread-locker is required on pushrod ends threaded into Rocket City ball links. The threads in the nylon shank are very tight, and essentially lock themselves (make sure that you have a minimum of 3/8-inch thread engagement).

All the rest of our fasteners should have some type of thread-locking

device. The most common locking device is the helical-spring lock washer. These are often included in the four-pack fastener sets you see at the hobby shop. I don't use lock washers, I don't trust them, and I don't recommend them. One way to lock a nut is to use a second (locking) nut tightened up against the first nut. The problem with this method is that you wind up using twice as many nuts and the bolt must be longer to accommodate the extra nut. A simpler way to do the job is to use a nylon insert locknut, also called an aviation locknut. These do a good job, but there are a few things you should know about them. They shouldn't be used in applications where temperatures are above 200°F, like on a muffler. Also, they lose effectiveness over time and with repeated use. The bottom line is that you need to replace them periodically. My favorite thread-locker is Locktite. This is a liquid that is applied to threads before assembly. After assembly the liquid sets up and locks the threads. There are other good thread locking compounds, but Locktite was the first and I'm familiar with it. There are many different grades of Locktite. Table 3 summarizes information on ones best suited to our applications:

I use Locktite 242 (blue) for things

Table 3 -- Locktite Thread-Locking Adhesives			
Locktite No.	Color	Set Time*	Description
222	Purple	20 min.	Low strength. Good for fasteners with long thread engagement and components requiring occasional adjustment. Removable with hand tools.
242	Blue	20 min.	Medium strength adhesive/sealant to lock and seal nuts, bolts, and screws against vibration-loosening and leakage. Removable with hand tools.
271	Red	20 min.	High strength adhesive/sealant which permanently locks and seals threaded parts.

\* Full cure time is 24 hours

like engine mounting bolts. I use Locktite 271 (red) in places where I want a permanent lock, like control systems. Yes, I use threaded fasteners in my control systems. Threaded fasteners are easy to assemble and adjust, and I use Locktite to make sure they never come apart.

**Special Fasteners --** Before finishing I want to talk about some special fasteners I use. These are commonly used in industry, but not in our models:

1. Button head cap screws -- These are like regular socket head cap screws except the head is a low profile button

with a recessed hex socket. I use them in places where a regular head would get in the way. For example, on one plane I used a button head cap screw on the front of the nose ring as a cowl hold-down. A regular socket head cap screw would have rubbed against the spinner. Button head cap screws are also used where a low profile is desired for appearance.

2. Shoulder screws -- These are socket head cap screws with an oversize head and a raised shoulder under the head. They are used when you want a bolt to take a side load. Applications include axles and pivots. I've used them in my Super Kestrels to make the tank compartment cover a load-bearing member. A shoulder screw in each corner of the cover makes the tank compartment a rigid box, yet the tank is readily accessible.



The button head cap screw and shoulder screw (both 4-40) are available from McMaster-Carr.

Nuts -- In applications that use a nut, using the right nut is as important as using the right bolt. I'm going to discuss four different types of nuts. Three are commonly used in our models; the fourth is going to be new to most of you.

1) Machine screw nuts -- These are commonly called hex nuts. They should never be used without a thread-locking device, such as Loctite.

2) Nylon insert locknuts -- I already talked about these. Remember to replace them occasionally.

3) Blind nuts -- These are commonly used with engine mounting bolts in planes with built-up fuselages. I know of a number of cases where they have stripped out and made a difficult repair job necessary. I've spent a lot of time looking for a better option, but Du-Bro's blind nuts are the best choice I know of. I strongly advise against using blind nuts from Great Planes -- I consider them to be of inferior quality.

4) Small pattern machine screw nuts -- These are machine screw nuts that are smaller than the standard size for a given thread. For example a standard 4-40 machine screw nut measures 1/4-inch across the flats and is 3/32-inches thick. A 4-40 small pattern machine screw nut measures 3/16-inches across the flats and is 1/16-inch thick. Small pattern nuts are useful as locking nuts and in spaces where space is at a premium. I've used them when mounting ball links to elevator horn. I use one horn with 4-40 threaded holes in the arms. I mount the ball link to the arm with a 4-40 screw (using Loctite to make sure nothing comes loose). As a backup, I add a 4-40 small pattern nut to the assembly (again using Loctite). This gives extra security, but uses the minimum amount of space (always at a premium in the tail).



Various 4-40 nuts. From the left are a machine screw nut, a nylon insert locknut, a blind nut, and a small pattern machine screw nut.

Titanium -- Steel has always been the material of choice for our fasteners because of its great strength. However, a new material has become available which offers similar strength with only 60 per cent of the weight -- titanium. The weight of our fasteners is not trivial -- the 42 fasteners in my Super Kestrel weighed almost an ounce. I use Central Hobbies pushrods with titanium end fittings. Titanium 4-40 screws are available from Lunsford Racing. They've been producing titanium products for radio-controlled cars since 1988. They offer 4-40 socket head and button head cap screws in a number of different lengths. Their address is:

Lunsford Racing  
2500 Three Lakes Rd., Suite A  
Albany, OR  
97322  
800-390-0181

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

Titanium is a bright shiny metal. In addition to great strength, it offers exceptional corrosion resistance. It is widely used in the aerospace applications and in the food processing industry. I use titanium screws in my airplanes, as engine mounting bolts and for various other hold downs. One caution in the use of titanium screws is that titanium will gall against aluminum. Don't use it for head bolts, back plate bolts, or to mount mufflers or headers to an engine. Titanium screws from are expensive, costing about a dollar apiece. With that price, I'm sure that many fliers aren't interested. However, with props costing \$50, I'm not worried about a few dollars for better screws.



Steel 4-40 screws (left) alongside titanium 4-40 screws (right).

In summary, we use a lot of fasteners in our models. If you want reliable performance, fasteners are of critical importance. I hope that the information in this article will help you build better stunt ships.

Good luck with your next plane.

-Noel Drindak





## WHY DO I FLY STUNT?



**Michael Duffy**  
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Recently I was asked why I fly Stunt instead of other events. Well, I think Stunt is the most exciting to fly. Now I don't want to offend anyone or have them think I am putting down what they fly; it's just that I like Stunt the best, and control line is a challenge that I enjoy. To me, Stunt is exhilarating and it keeps me on the edge when I fly. I love flying a pattern and knowing what comes next so I can prepare for it and it will look awesome. Another reason is that there are so many experts that fly Stunt, like my current coach Bob Whitely, who will help me to succeed.

I started flying control line airplanes on Easter weekend 2003. A trainer was the airplane I started with, then moved up to other designs from there. I enjoy flying planes because it is just an awesome hobby. At times I get very competitive and at others I will lay back and just fly for the fun of it.

In the future I plan on taking all the knowledge I have gained and use it towards a career in Aeronautics. I want to become a pilot or an aircraft engineer/designer. This would be a great career for me to have.

Bob Whitely has helped me in both building and flying. Without all of his (and the many members of the Tucson Cholla Choppers) dedication and support I would not be where I am

today. Bob Whitely, Bill Heyworth, Ed Capitanelli, and Mike Keville were great contributors and helpers in building my first Stunt ship.

I have just started flying some Combat and let me tell you, it's FAST. This speed helps me fly my pattern and finesse my maneuvers because it all just feels a lot slower after that. Plus I think that Stunt planes are awesome. The process of building a Stunt airplane is a great deal of fun and a definite learning experience. To me the control of a Stunt ship feels better than anything I have ever flown before. My next model will be a VECTOR with a Brodak 40. I think this will be my best plane of all.

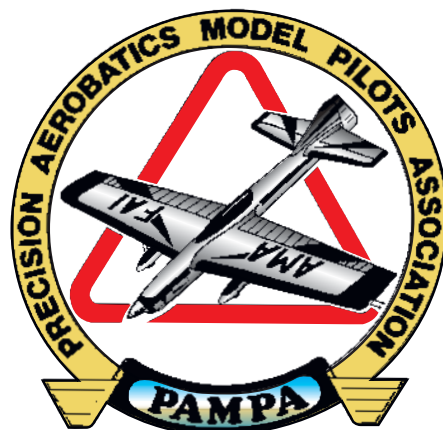
I plan on flying Stunt throughout my whole life and, with a lot of practice and determination, trying to master it. My goal is to someday win the Nationals then go on and compete in the World Championships. I hope one day I will be able to reach those goals.

-Michael Duffy



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## FEATURES

Mounting Your Canopy  
Scott Richlen

The I-Beam Stiletto 660 Part I  
Darrell Harvain

The two articles by Bob Whitley and Joe Utasi are reprinted with the express permission of Mr. Hal Carstens and Flying Models Magazine.

Retract C/L Stang  
Bob Whitley

Auto Retract Controller  
Joe Utasi

A Stunt Model with Retracts  
Uwe Kehnen

### Mounting Your Canopy by Scott Richlen

For a beginner, one of the challenges of completing your first full-blown, full-bodied stunt ship is mounting the canopy. Now some of you may just want to carve a block and paint it black, blue, or silver for your canopy, but there are always those of us who want to put a pilot and instrument panel into the cockpit of our nifty little stunt machine. If you are one of this happy little group – well read on! Here is how I glue my canopy on. It is definitely not the only way to do this, in fact, it may not even be the best way to do this. But, it works for me!

I like to carve my own pilots out of blue foam and mold my own canopies (if you want original, well sometimes you got to just push yourself out a little farther than the rest of the guys....) And anyway, there are some pretty good looking plastic pilots you can get and paint up if you don't mind them looking a bit "generic". Check with Windy to get a video on cockpit detailing. He has a very good one on his Spitfire cockpit that will give you lots of great ideas. But today, let's assume you've completed all of your detailing and are ready to glue your canopy on.

The tricky part of gluing something

transparent is getting the glue where you want it and keeping it from getting all over where you don't want it. So, at the very beginning, I tape over the exterior of my canopy with masking tape to make sure I don't smudge it with glue while I am gluing it on. This will also keep you from scratching it when you are preparing it for glue bond by sanding the inside edge. Yep, that is the first thing to do – tape off the inside of the canopy leaving about an eighth inch wide band all around the inside edge. Now you are going to carefully sand this inside edge to make sure the glue bonds. Of course, by this point you have already carefully "fitted" the canopy to the cockpit and it fits correctly without having to force it? Yes?



Here's my canopy all glued into place. Note the three different ways I have used masking tape to get the job done.

The next step is to mount your canopy in position and tape off the fuselage around the canopy leaving a 1/16th inch space all around the edge of the canopy. At this point you can remove the canopy again and "inlet" this taped off area of the fuselage by about 1/32nd inch deep so the canopy edge fits flush with the fuselage surface. Usually, I don't do this but after gluing the canopy simply build up a layer of epoxy filler, or its equivalent, to cover the canopy to fuselage transition. Now we come to the tricky part, putting glue (I use epoxy, but canopy glues work well, too) on the inside edge of the canopy. (Its probably easier to remove the tape on the inside of the canopy before you apply the glue rather than later.) Actually, the tricky part isn't putting the glue on the inside edge of the canopy, but is not putting it anywhere else. Once you have the glue applied to the canopy you will carefully put the canopy in place on the fuselage and while holding it in position with

one hand, applying tape with the other (you did pre-cut a bunch of 3 inch lengths of masking tape, yes?) This part becomes a bit convoluted because while you are taping the canopy tightly down, glue is going to be squeezing out of the joint and into that little 1/16 inch space between the canopy edge and the tape you had previously placed on the fuselage. And you will be wiping this glue up with cotton-tipped swabs or little squares of paper towel you previously cut to size. In this process you may end up removing some of your first tape strips, cleaning excess glue from out under them and then reapplying tape. After this cleaning, I usually add a layer of tape over the seam area to keep additional glue from oozing out. Now set the plane on its wheels and leave it alone for 24 hours as the glue runs down into the canopy fuselage joint and hardens. Tomorrow you can remove the tape and decide how to finish the external joint.



Next step is to tape the canopy off and paint the "birdcage."

-Scott Richlen





## The I Beam Stiletto 660

### Part 1

By Darrell Harvin

Once upon a time there was this model called the Stiletto by Les McDonald the look was always so cool I just had to build one (eventually). So while judging at the NATs I got a copy of the plans. I've been flying a few ARFs and a Nakke with an LA 46 so I thought I would give it a shot. Looking at the plans I thought of ways to make it lighter. Other than using 4-6 lb wood. (I did & the balsa trees are weeping.)

#### Lets get started with the fuse:

Here molding top & bottom shells saved weight. Here's where that 14-15 lb balsa comes in handy. After the mould is carved and sanded I apply bowl finish to the mold.

It keeps the ammonia from swelling the mold. Spray the balsa with ammonia and place in a Food Saver vacuum bag and seal. Take the balsa with the sealed bag and wrap around the mold. This way you can wrap it around tight corners without splitting the wood.

Take the balsa out the bag and wrap it around the mold with an ace bandage. (See pictures below.)



After the balsa dries, trim the mold and install the bulkhead stations. For the best fit I like to mark off the mould at each bulkhead and cut them with a

bandsaw. Then you can trace, cut and glue in place.



The fuse sides are made per plans except I used 1/32 plywood and light carbon veil. To make the fuse top straight I like to use a router and a device called Jointability (See Picture above)

I use it to edge joint long pieces of wood. It can joint pieces up to eight feet long. This is better than cutting or band sawing because I have experienced that the wood sometimes would bow or turn itself into knots. (More trees weeping again.)

#### Time to prep the wing:

Originally I intended to build the wing as a D-tube but after watching Bill Werwage build an Ares I Beam wing about a billion times (yes I did on tape.) I decided to give it a shot. So buy it and watch it a lot!

That being said I will go over some highlights and one left handed moment. For the spar Bill recommends 1/16 mahogany plywood. If you can't find it locally you can find it at aircraftspruce.com. A 2X4 sheet should be more than enough although you can use the birch. The mahogany is a bit lighter though.

The spar caps and trailing edges are glued on with .007 carbon fiber. When making the trailing edges I cut them with a band saw with a fine tooth blade. Here's where the wood grain must be totally straight (another tree bit the dust for this one). The spar cap width should be cut after the spars doublers & triplers are done.

Here is the left-handed moment. When cutting the ribs (Lots of trees R.I.P here) I used the up to date method but I made the jig to cut from left to right. The next I Beam project this will be reversed which will make life easier so I can use my left hand instead. Also cut at least 10 percent more than you

need because I guarantee you will need them! (See picture below.)



#### And now to bring it all together:

The wing and fuse goes together as per the tape. So on to more highlights. Put the flap horn in place through the T/E cutout BEFORE assembling the fuselage. The trailing and leading edges are tied into their bulkheads.

While putting in the strip ribs use a straight edge to make sure everything is aligned.

This I feel to be a critical step so sanding will be kept to a minimum. The bellcrank is installed at this point. I used the Tom Morris System. This is a far better way to put in a bellcrank because no solder is involved unlike eyelets. I took 1/8 ply and trapped the bellcrank on top of the spar caps and the fuse. The control hookups were done as per the plans but with a twist. Since we have ball links, the flap and the elevator pushrods were tied together at the same point at the flap horn.



At this point don't forget to put the stab in using your favorite method. And now the real point of no return, installing top & bottom blocks/shells. Solid balsa is used for the ends of the bottom and the top shell carved and fitted.

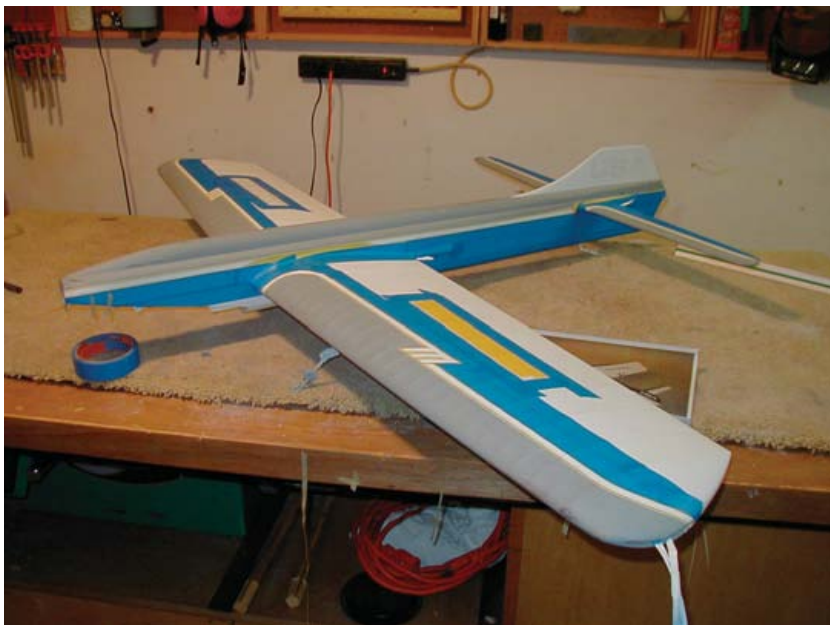
The top block is a two-part affair so the lower half is 3/8 balsa carved & hollowed and fitted to the top of



the fuse. After the bottom shell/block is fitted the cowl is made. The cowl bottom is molded Balsa also only the front of the cowl is a carved block.



Now the front end is carved and sanded in place with engine and spinner installed. After that I believe all the parts can be put in place. For the top & bottom blocks they were glued with Titebond 3 wood glue. It can be applied straight out of the bottle and it sands easily. Now comes the elbow grease necessary to prepare it for finishing. At this point the model weighs 21 ounces without the elevators and flaps.



Next time we'll cover the way I paint the plane with nitrate dope & Klasskote paint

If there are any questions I'm at home somewhere if I'm not working on other things while paint is drying such as this model of the USS Constitution

813 Busse Circle  
Pasadena, TX 77503

Or for a sometimes quicker response.

dstar\_1\_stunt@yahoo.com

Later.

-Darrell

**Stunt News encourages the advancement of Control Precision Aerobatics in the technology and aerodynamics areas. The following two articles were provided by Flying Models magazine, courtesy of the publisher, Mr. Harold Carstens.**

**Mr. Carstens had this to say about Control Line Precision Aerobatics:**

*"Tom:*

*Pampa has our permission to reprint the Utasi and Whitely articles from the September 1994 issue of Flying Models. Please credit Flying Models Magazine.*

*It's good to see this area of the hobby is still active and hanging tough. Too many modelers today don't even know what an X-Acto knife is, no less scratch build a plane, or any kind of model. We'd appreciate a copy when it is released.*

*Hal Carstens"*

**They are a lead in to a great article on Uwe Kehnen's recent success with retracts on his F2B ship.**

**Again we thank Hal Carsten's and Flying Models Magazine for the permission to reprint their two articles.**

**Tom McClain  
Managing Editor  
PAMPA Stunt News**







PHOTOGRAPHY: LUCKY PYATT

It was back in 1968 that Al Rabe premiered his novel, highly successful P-51 Stunter. Bob Whitely chose this historic model to incorporate another historic C/L first, retracts for Stunt.

# Retract C/L "Stang"

By Bob Whitely

Using an historic design, the author makes more Stunt history with the Jomar Products retract controller.

**A**rguably, the P-51 *Mustang* was, and is, the most successful prop-driven fighter aircraft ever produced. Coupled with its distinctive air scoop and the siren song of the *Mustang's* 2000+ hp Rolls-Royce Merlin engine, it was immediately identified as a fighter to be reckoned with.

The *Mustang* is the second most modelled aircraft in history, the first, of course, being the *Piper Cub*. All of us, at one time or another, have probably had some kind of P-51 model.

In 1968, C/L Stunt great Al Rabe flew his version of the P-51 called the *Cavalier*. Since Al was involved with the real aircraft, it was only natural that he turned his talents to a model of it. Al was very successful with his *Mustang* series. Thanks for all the hard work and memories, Al!

Due to the huge success of the annual "Vintage Stunt Championships" many models are now being built that would otherwise be just "memories". Since the Rabe

*Mustang* qualified for "VSC", I thought why not build one, revive a great model, and at the same time put retractable gear in the aircraft. I could fly it at "VSC" with the wheels down for official flights and indulge myself with a unique prototype for the rest of the time.

Is there a "Wow" factor in Stunt? You better believe it! A semi-scale model always attracts attention, but when they see the gear retract, you've got 'em hooked! My model is the military version with stars and bars painted silver with yellow and red tips. It is built absolutely to the original plan including the Rabe wiggle-rudder (moveable in flight rudder—Ed). The only exception is the retractable gear.

As I remembered it, the Rabe P-51s were excellent flying models, so much so that my good friend Lucky Pyatt wanted to build one at the same time. I figured that this would really show the difference



With the gear up, the author noticed a change in pitch trim. He also noted that there was absolutely no slight yawing or weathervaning, likely due to the absence of a fixed gear's drag effect.





between an aircraft with "down and welded" and retractable gear.

While glancing through *FLYING MODELS* magazine, I came across an advertisement for an R/C, sequential gear door activating mechanism for large R/C P-51s. It was a very trick unit and very small. I figured that if this person could design a product like this, I should call him for some help.

Jomar Industries, A.K.A. Joe Utasi, turned out to be the ideal source. I briefly outlined what I wanted to do and Joe said "No problem." Within a week I had my little magic "black box".

We all know that for a retractable gear to work best in a Stunt ship, the mechanism should be engine dependent. We want this so that there is no need for insulated lines or a third line, since the increased drag and weight of either would be detrimental to the flying qualities of the model. Joe's system relies on a timer to bring the gear up, and then switches to an audio circuit which extends the gear when the sound of the engine stops.

I immediately built the P-51 and installed the gear. Some difficulties were encountered, such as moving the bellcrank aft to clear the servo, and installing the gear doors.

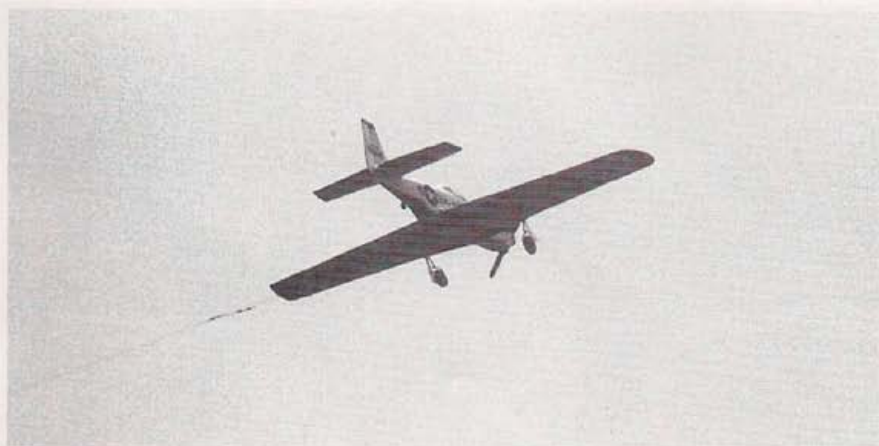
The day came to fly both *Mustangs*, mine and Luckys'. I had thoroughly tested the gear system so elected to go "wheels up" on the first flight. Wow! About eight seconds after launch (the timelag is adjustable to suit) the wheels retracted! A slight trim change became evident as I had to increase the "down" pressure with the wheels retracted. Another interesting note was an increase in engine rpm.

Saving the best for last, I can report that the model flew excellent! Ever wondered why your otherwise great flying model wiggles in the wind or tends to rock and roll for no reason? It appears that the landing gear on most of our airplanes create enough drag and turbulence to cause the above.

With the wheels retracted, the P-51 gets "real smooth" and has a very "silky" feel. Corners become much easier as the model turns the same each way. We tend to trim this problem out of our conventional geared aero-



The gear start down right after the engine quits (above), since the sequence depends on engine sound. The gear is now locked down for landing (below). The retracts in the author's plane are mechanicals.



batic craft at the expense of performance.

Since the retract unit relies on engine sound for operation, when the engine quits (anytime) the gear will extend. I have about fifty plus flights on my P-51 and the retracts have worked every time—oh, and Lucky's *Mustang* flies great, too, except his wheels are always down.

I want to thank Joe Utasi of Jomar Industries (3440 Riverhills Drive, Cincinnati, OH 45244; phone 513-271-3903) for his exper-

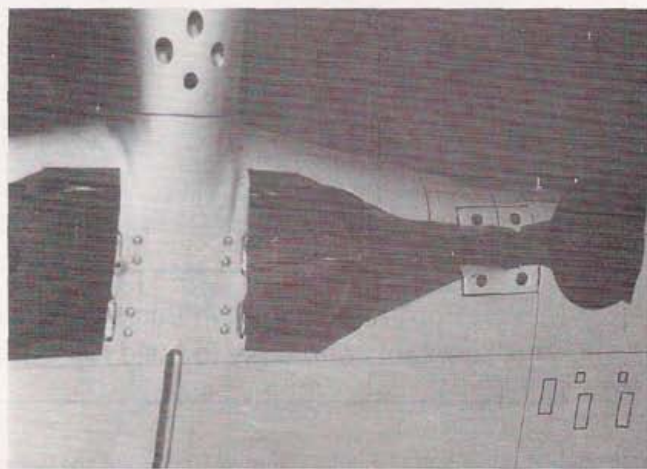
tise 'cause it wouldn't work without his smart little unit. I plan to have a larger P-51 for 1995 Nats—can't wait!

For those of you who would also like to have retracts in your favorite model, give Joe a call and get one of these units. Total weight increase with batteries is about 4–6 ounces.

Installation is a very straight-forward R/C type set-up with either a retract servo or regular servo with very light landing gear. Try it, you'll like it! **CC**



The small circle on the side of the fuselage (above left) is the arming switch for the retracts. It is turned on at launch, and after the desired interval set on the auto



retract controller, the gear will retract for as long as the engine runs. With gear down, a look inside the wheel well (above right) shows the retract pushrod.

## A C/L Breakthrough!





**I**t's not very often that you see an "electronic" article for U-control flyers, and usually it's a lot of gimmickry or gadgets that require continuous attention or fiddling to get to work. This is *not* the case with this project! If you fly precision stunt, scale, or sport in C/L, and you've wanted reliable retract actuation, this is the project for you!

A while back I was contacted by a flyer named Bob Whitely. He asked me if it might be possible to create a simple circuit that would *reliably* put the gear up and down on a ukie stunter, while keeping weight and complexity to a minimum. The requirements were as follows: light weight, reliable, puts the gear up after a preset time delay (only if the engine is running), and extends the gear when the engine stops. Sounded pretty straight forward to me, so I put my mind to work immediately.

But first: *why* would retracts be of interest to a ukie flyer? Sure it looks neat, and that's the obvious first reason. But if you look further, the impact of this little development could be the first real "breakthrough" since the development of the carbon fiber tuned pipe systems. Stunt flyers still turn 5.5 second laps, and everyone is still looking for the 5-foot radius "corner", flying aircraft in the 50- to 55-ounce weight range. So how will retracts make a difference?

Well, if you consider the wheel at the end of the strut to be somewhat of a mechanical "pendulum", it definitely *does* affect the turning radius. It tends to "slow" the insides (make the radius bigger) and "speed up" the outsides (it allows the radius to tighten up). So you see, if the wheels are "up", this will move the center of mass higher, and, hopefully, symmetrically into the aircraft's vertical c.g. location, so that the insides and outside corners are the same! This will make the aircraft easier to fly in a consistent fashion.

A side benefit, of course, is less drag, which means that the engine doesn't have to work as hard when pulling up into the verticals. It also means that crosswind performance will improve, since you are reducing the side profile by the area of the two wheels and typical strut covers. Got you thinking, now, haven't I!

### Installation

Installing the autoretract controller in the aircraft is pretty simple. Most flyers will want to substitute a small 150 to 225 mAh 4-cell Ni-Cd pack for their wingtip weight. The power is needed to power the retract system, and the tip weight is a necessity anyway, so the substitution means no sacrifice in overall weight. A pair of light #22 wires carry the power from the tip pack through the wing to the fuselage where a simple "single throw" switch is installed before the wires go to the autoretract controller board.

The controller is mounted in the fuselage with some Velcro™, Zap, or other reasonably permanent fastening method. The two wires from the switch are soldered to the circuit board in their marked locations.



FLYING MODELS

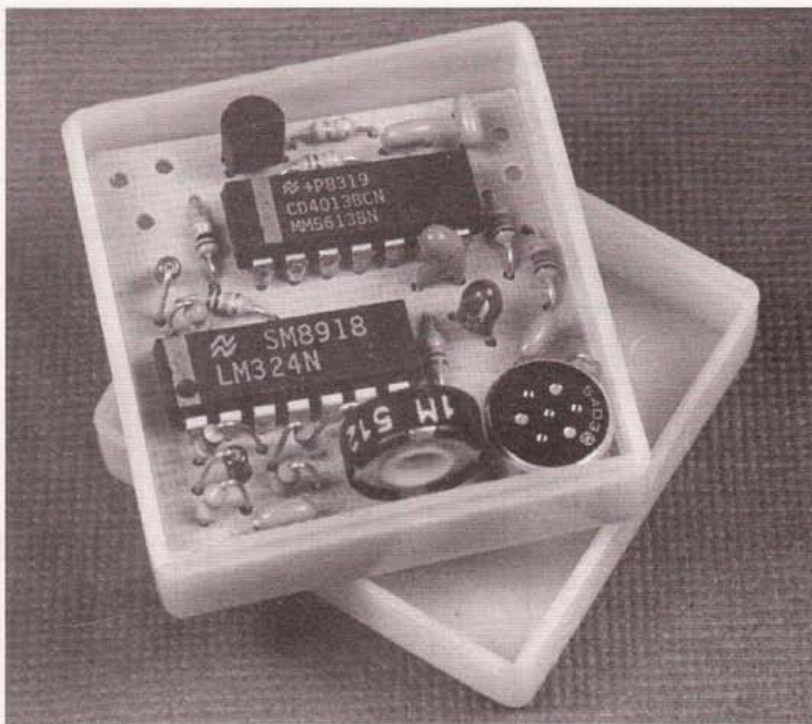


PHOTO: COURTESY JOMAR

All the circuitry and components for the Autoretract Controller easily fit inside a small plastic receiver case. To complete the system a 150-250 mAh 4-cell battery and a standard R/C servo are needed.

## A Control Line ... Autoretract Controller

by Joe Utasi

Well-known R/C electronics whiz turns his talents to creating an easy, reliable retract system for C/L.

Next, you need to "procure" a standard R/C servo from your local hobby shop or out of one of your "R/C" buddy's junk box. A "standard" type of servo works best since they have roughly four to five pounds of actuating force at the output arm, which is more than enough to activate a properly installed and balanced set of retracts.

Since we don't need to be "servicing" the retract installation, it is best to solder the servo leads directly to the circuit board. This way, there is no chance that the plug will come loose in flight causing a wheels up landing that could mess up that million dollar finish that ukie flyers love to put on their pride and joy!

### How it works

With the system installed, the operating concept is pretty straight forward. The adjusting trimpot, R6, controls the delay

time from when the switch is turned on till the gear goes up. It is adjustable from one second all the way to about 12 seconds. Just before your helper releases the plane for takeoff, he turns on the switch. Then, after the delay, the gear will retract *only* if the engine is running. A tiny electret microphone mounted on the circuit board "listens" for the engine. If it "hears" the engine running, it allows the gear to go up. Later during the flight when the engine stops, the microphone detects the "absence" of sound, and puts the gear down.

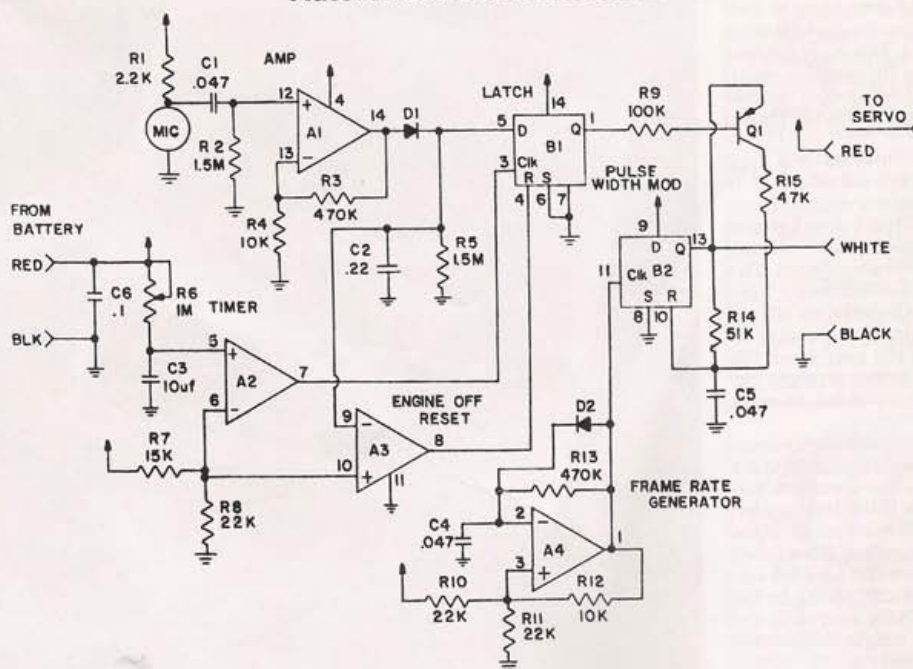
It is a very reliable circuit, and I'm sure that after building it, your wife or girl friend will wonder about the strange motor noises coming from the basement as you "test" the system by pretending you are the motor! I know my girl friend thought I was a little strange until I explained what I was doing!

— A C/L Breakthrough! —





## Autoretract Control Schematic



### Circuit description

The goal here was to create a simple, reliable circuit that could be assembled from easily available components, that would do a good job. I limited myself to the board size shown, since I use a standard ACE "Christy mixer" case for little projects like this. This meant that I could use only two standard integrated circuit chips to do the entire design. After 2 or 3 tries, I came up with the circuit as it stands.

Here's how it works. R1 provides a DC bias to the electret microphone cartridge. This signal is AC coupled through C1 to amplifier A1 that provides an amplification factor of about 47 times. The output of A1 is turned into a DC level by D1 and C2, while R5 makes sure that this output always drops when the sound stops. R6, C3 and A2 provide a "power-on reset" signal that function as the timing for the retract controller. When the power is turned on, C3 begins charging through R6. When the voltage reaches the level set by divider R7 and R8, the output of A2 goes "high".

If the engine is running and the DC level at the output of D1 is "high", then this "high" on the "D" input of B1 is "clocked" through to the "Q" output.

Op amp A4 is set up as a "frame rate generator". This provides a repetitive pulse about 50 times per second that is required by any standard R/C servo. This pulse is routed over to B2 which is a pulse generator. By controlling the width of the pulse generator's output pulse we literally tell the servo where to position itself. Normally, if we turn on the controller the pulse generator puts out a narrow pulse (about 1 millisecond) that keeps the gear down.

The charging path for C5 is through R14 and Q1 and R15. If the motor is running and the Q output of B1 goes "high", this turns Q1 off, and C5 takes longer to charge up, producing a wider pulse (about 2 milliseconds).

These pulse widths (1 and 2 milliseconds) correspond to the maximum allowable travel that all modern servo manufacturers design into their servos without the risk of stripping gears! While the use of a 4013 chip

### PARTS LIST

Part	Description
R1	2.2K 1/8 watt resistor
R2, R5	1.5M 1/8 watt resistor
R3, R13	470K 1/8 watt resistor
R4, R12	10K 1/8 watt resistor
R7	15K 1/8 watt resistor
R8, R10, R11	22K 1/8 watt resistor
R9	100K 1/8 watt resistor
R14	51K 1/8 watt resistor
R15	47K 1/8 watt resistor
R6	1M trimpot
Q1	2N3906 PNP general purpose transistor
A1, 2, 3, 4	LM324N quad op amp
B1, 2	CD4013 dual D CMOS latch
C1, C4, C5	.047uf 50 volt monolithic ceramic capacitor
C2, C6	.22uf 50 volt monolithic ceramic capacitor
C3	10 uf 16 volt tantalum capacitor
D1, D2	1n914 or 1n4148 switching diode
M1	Electret microphone — DigiKey #P9949
Circuit board	Jomar #UR
Miscellaneous	plastic case, wire, switch, nicad pack, servo



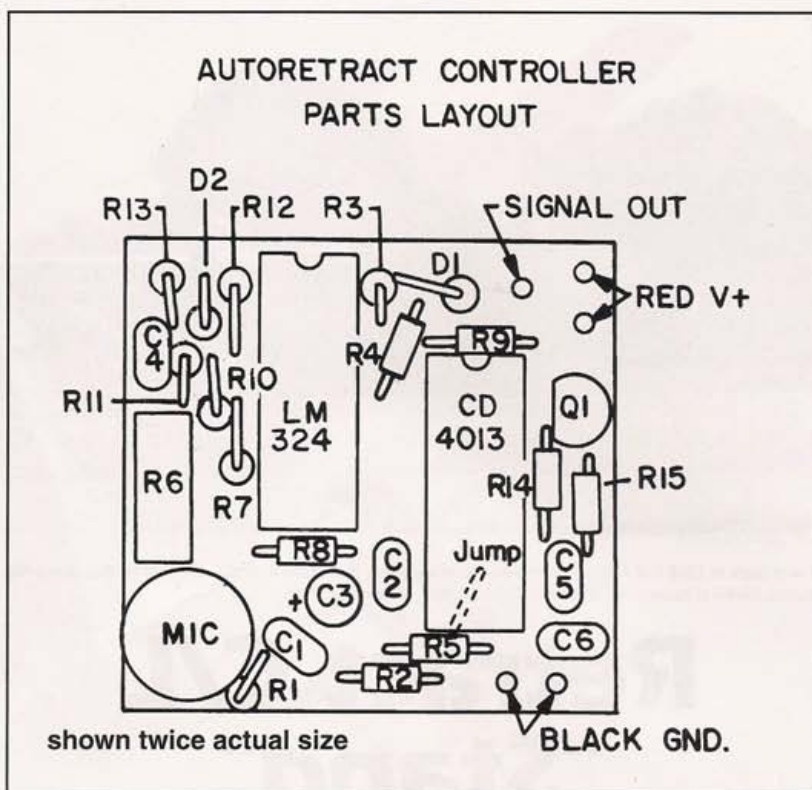
as a "one shot" is a little out of the ordinary, the design works very well and is extremely stable.

### Construction

The circuit board pattern has been provided and is the easiest route to follow to produce a working retract controller. However, the layout is *not* critical at all, and it may be done by point-to-point wiring and it will still work fine. If you go the circuit board way, it works best if you use 1/8 watt resistors. If your budget won't allow it, you can get by with 1/4 watt parts. It's just a little bit tighter. Be sure that you use "monolithic ceramic" types for the .047 capacitors; they should be "X7R" or "NPO" types for good temperature stability. C3 should be a "tantalum" part for good timing characteristics, although a good "low-leakage" electrolytic would probably be ok. Don't forget that one jumper under the 4013. It always seems that there has to be a jumper somewhere!

Use a good, rosin-core, electronic grade solder and a quality soldering iron. When the board is complete, scrub the bottom down good with acetone, lacquer thinner, or actual "flux remover" to get it good and clean. You might even want to give it a coat of clear "Krylon" paint to keep the effects of leaking fuel, humidity, or whatever from affecting the operation of the circuit. If you put the parts in the right places, the thing will work right the first time you turn it on. There is nothing to adjust other than the delay timing, and that is not really critical.

The system draws almost no current at all from the battery pack other than the "idle" current of the servo. Total current drain is only about 5 milliamps. If the servo and retracts are installed free of any "bind" or friction, the only drain will occur when the gear is actually going up or down. A 225 mAh Ni-Cd pack should thus provide five or six hours of use, which is one heck of a lot of

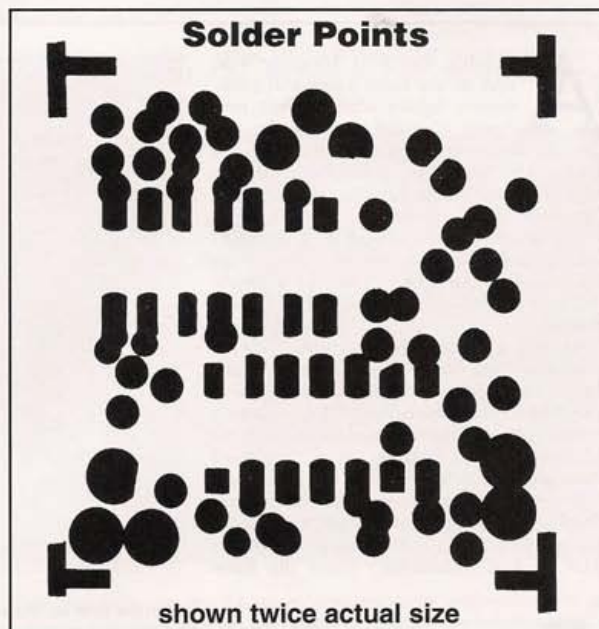
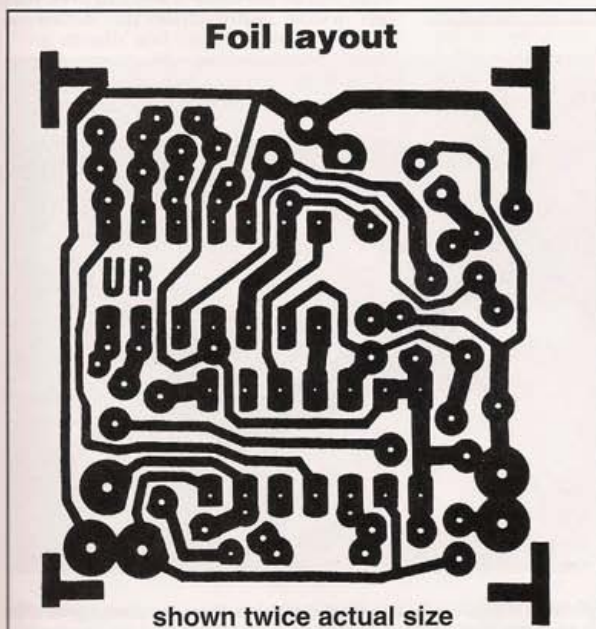


**Key to the controller** is a timer and a small electret microphone, which senses engine noise. The system is switched on at launch, retracts the gear at a pre-set interval, and drops the gear when the engine stops

flying! I hope you find the autoretract controller a novel idea, and I invite you to participate in the first real "revolution" in ukie in a long time! Enjoy!

An etched, drilled, solder-masked and sol-

der-plated circuit board is available for \$5. A fully assembled and tested unit is also available for \$39 plus \$2 shipping. Contact Jomar Products at 3440 Riverhills Dr. Cincinnati, OH 45244; phone 513-271-3903.



## A C/L Breakthrough!

## A Stuntmodel with Retracts A 20 Year Dream by Uwe Kehnen

I have often thought about stunt models with retracts. At the 1982 World Championships in Sweden, I saw for the first time a stuntplane with retracts. It belonged to one of the Chinese pilots. It was difficult at that time to communicate with them, but I think the system was operated by a timer.

My first attempt for a stuntmodel with retracts was in 1984. I started with a self-built pneumatic gear controlled by engine pressure. The gear worked fine, but the controller did not.

Following that first experiment, a good friend developed for me a simple electronic circuit which was able to change polarity at a certain temperature measured by a sensor mounted in the exhaust. That means a connected electric motor would change directions at certain temperatures. In other words: Hot sensor means the engine is running so the gear is to be up; Cold sensor means the engine has stopped running, so the gear is to be down. The circuitry could be adjusted for appropriate motor direction at the desired temperatures. In front of the circuit was a time-delay-module, so that after switching it on, there was an adjustable time delay before the sensor was active and gave current to the circuit to initiate the retraction sequence. The whole thing was connected to a servo without internal electronics (just the motor and the gear) to operate the retract mechanism. The next problem to solve was the interruption of the current, when the gear was in the all up or down position. I solved this with several microswitches. The cable bundle going from the wing to the fuselage was quite large, somewhat like a finger.

The system worked fine, but sometimes the gear would collapse during a landing. The gear itself, which was the only commercial part in the system, was not strong enough. My development then stopped for several years when I had to begin to earn a living.

The September 1994 issue of Flying Models had articles by Bob Whitely and

Joe Utasi about an electronic system for a retractable gear in a control line model. This concept and design was perfect for me. That system was based on a switch operated at model release to provide a time delay allowing the model to lift off, thereafter the circuit will be hot. A small microphone senses the noise from the engine. If it is loud -- the engine is running and the gear will go up; if it is quiet -- the engine is not running and the gear will come down. A normal servo can be connected and the large cable bundle would not be required.

I ordered the electronics at <http://www.emsjomar.com/SearchResult.aspx?CategoryID=6>, then built a unit on a test stand and was very happy with the results. Generating noise for my test runs encountered problems. First I used an electric organ until the family suffered from sleep disturbances. I then used a walkman with extremely loud rock music with earphones directly on the microphone. In the later building phase I used a servo tester to make test runs. It must be very noisy so that the microphone will sense the engine is running. Mounted on a test stand, the gear retracted when it was as close as 1.5m to a team race engine running at full power.

At that time, I again stopped working on the project for several years. Competition flying, training, building houses, occupation and family (kids are only young once) simply left no time for uncertain experiments. I was with my son Felix on the national team at the 2004 World Championships, my largest success up to that time. After the Championships, I chose to take competition flying a little bit less serious and to dare an experiment.

I decided to build a new wing with a retractable landing gear for one of my existing Impact fuselages. I wanted to accommodate the whole technology in the wing and to have no wiring between wing and fuselage assemblies.

It was then time to search for parts. It should be easy to order mass production parts. In addition, the increase in weight should be within tolerable limits. For the single servo

necessary, I used a special retract-servo from Hi-Tec # HS-75 BB (which is called a 180° servo). This servo has the advantage that it is very sturdy and only functions by driving from one end position to the other. I first thought to use two small servos to avoid complex mechanical problems, but on my test stand, the two servo approach did not look very satisfactory. There are strong forces on each gear leg during their retract and extension sequence due to the circuit that need to be accommodated by each respective servo. The one-servo solution allows the forces to compensate each other.

For the power supply, I found 330 mAh NimH cells with only 6g weight per cell. Four of these cells were soldered together to an Akkupack of 4.8V. (If you have no experience in soldering cells ask someone to do this work for you as you can destroy these things easily). I soldered connectors to the battery pack (servo connectors are strong enough). I covered them with shrink tubing to increase their strength. I ordered the electronics at Jomar (at the link above). They are not very fast, so allow a few weeks for shipping. If you have the FM Sep 94 issue, maybe you can build it by yourself. It might be difficult to get the right microphone. The one listed in the article is out of production.

There are a lot of retracts on the market. The lightest I found was the Robart 600. There are some heavier units available that look stronger, but I do not know if the extra weight and strength is necessary. I used a mini-switch from the electronics shop. Use a water resistant version if you can find one since contests take place in all weather conditions.



### Weight overview:

The retracts I used are approximately 15-20g heavier than

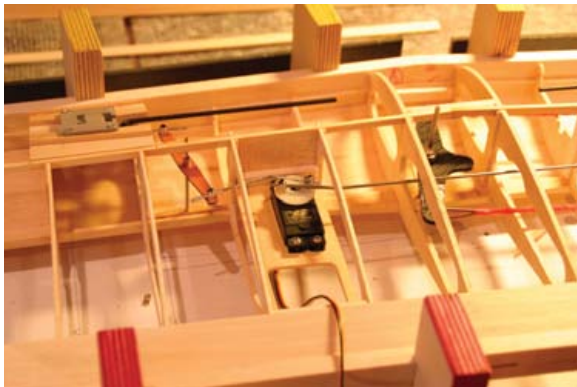
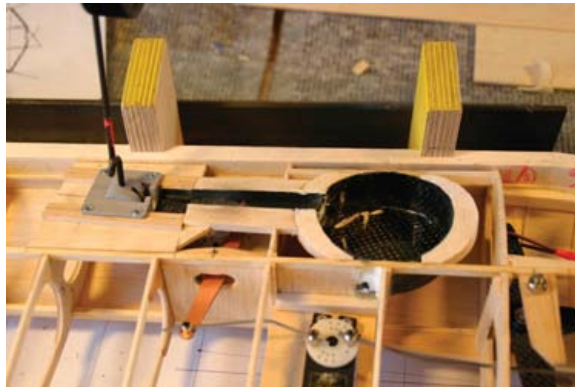




with a normal torsion wireleg. The battery and the switch can fly for no additional weight when used as tip weight. Electronics will weigh approximately 10-15g, depending if you install it with or without a case. For cables, I would estimate another 20g. The mechanical linkage will have some additional weight. In the ideal case, the increase in weight could be 60-100g (2-3.5 ounces). My first attempt was over 200g (7 ounces). I consider this a rough prototype. On the next wing I will change a few things and will be able to reduce the weight to the level estimated

spars.

The wing is built in the normal way. The gear ribs carry the U-shaped gear bearer. Then you can test fit the retracts. At the points where the retracts rest in flight, you will have



above.

#### Now to the installation:

I selected the same point for the gear as with the normal version. This was a big error which I noticed much too late. At that location, there was no place between the wheels and the fuselage and I had to build some complicated and heavy linkages and bellcranks. On the next model, I will place the retracts more outboard so that only two small wires will be needed from the servo to operate the system. The servo will be in the outboard wing, between the wheel and the fuselage.

The gear ribs were converted as follows. Make a simple 1:1 drawing to show where the wheels will be located when retracted so you can determine the mounting angles for the retract mechanism. For the gear mount, I used a U-shaped piece of plywood, doubled with thin maple bearers to carry the gear. The ribs holding the gear mounts were reinforced with 1mm plywood, ending just behind the

to remove the lower part of the ribs and build in a wheel bay.

#### Now some thoughts regarding wheel fixing:

Before bending the wire I made a 0.5mm deep and 0.3mm wide notch into the wire, so that a small spring collar can be used to retain the wheel. You have to work very precisely at this point.

The advantage of this system is that the wheels do not retract very deep into the wing to allow clearance or the leadout wire. You can leave the bellcrank in the middle of root ribs.

After mounting the wheels, you

can build the wheel bay. I use home built carbon parts, but something built up from wood will have the same effect. The parts were built in and framed with balsa. You can then contour the lower rib parts to match the other ribs. Before sheeting, you have to build in the servo.

The electronic parts are in the space behind the Servo. Remember to build in removable covers over the servo, electronics and battery. Then you can build in the battery and the switch in the wingtip. Connect everything and test it. If you are satisfied you can build the rest of the wing.

#### The strut covers were built as follows:

Cut four pieces of carbon mat that are oversize to fit over the wheel wells. Saturate two of these pieces with epoxy on a non-sticking piece of foil (The foil of the backside of iron-on foil is perfect.) On the top of the carbon package, lay another piece of nonsticking foil. Lay this foil-wrapped carbon package on top of the wing over the gear bay area. Do the same thing on the other side. After curing, you can remove the laminated carbon gear doors from the foil packages and trim to final shape to match the gear bays. Then mount the right top to the left gear and vice versa. The mounting is pretty simple. I solder thin metal straps on the gear leg to provide more gluing surface. I use the same metal used to build fuel tanks. Now you





have to retract the gear and put some large spots of good silicone glue on the gear leg and the metal sheet. Fill the gaps between leg and cover with the silicone glue. To make it bulletproof, I secured the covers with a thin wire to the legs. The result is a nearly perfect covered wheelbay with true wing contours and shapes over the wheel wells.

**Before the first flight I recommend extensive testing on the ground:**

Switch to off, start the engine, lift the model and then switch to on. Depending in the setting, the gear should retract after 5 to 15 seconds. Now, stop the engine and the gear should extend without any delay. I set the time delay to maximum so I can have more time when I have a helper who is not familiar with the system.

Always remember: Activate the switch at the release moment and not earlier.

**Flight experience:**

You will need to compensate for a noseup moment during the retraction sequence. There will be a more equal feeling with the inside and outside

loops. I have the feeling that the model is less sensitive in turbulent air. At the present time, there is not much more to say because my current model is too heavy.

I think the biggest effect is the show and impression. The only problem I have encountered is that the gear has occasionally extended twice two times during flight. This was most probably caused by a bad soldering point. In the first year of operating this system, I never experienced a gear-up landing. Unfortunately, at the beginning of last year, I did experience a gear-up landing. Some judges are now waiting for it. I hope I can make them wait for a long time before any gear-up contest landing.

Improvements on the next model (maybe by the end of 2007 or in 2008):

- The weight has to be more equally distributed on the model. I put so much heavy stuff on the outboard wing that I had to compensate with added weight on the inboard wing (about 2oz).

- The retract gear assemblies have to mount more outside to save the

complicated mechanics.

- I will build lighter wheelbays from thin composite.

- The most important thing (joke) is to find a way to retract the tailwheel. First it looks ugly and second it is boring to hear many complaints at a contest about the tailwheel. (That is from people I call friends.)

Prices if you like to try it:

Gear 30 -70\$

Electronic 50\$

Battery and switch 30\$

If you have any questions send me an e-mail or make a thread in the Stuka Stunt Forum and let me know about it.

Have fun,

-Uwe Kehnen

f2b1@gmx.de





# INTERNATIONAL NEWS - AUSTRALIA



**Peter Anglberger**  
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F2B Winners L to R 1st Paul Turner, 2nd Reg Towell, 3rd Joe Parisi

## 60<sup>th</sup> Australian Nationals Stunt Results

28<sup>th</sup> December 2006 – 6<sup>th</sup> January 2007

### F2B AEROBATICS – EXPERT

	State	rd 1	rd 2	rd 3	rd 4	'average'	Model	Motor	Prop	Lines	Fuel
1.	Paul Turner	NSW	<u>1011.5</u>	985.25	992.5	<u>1029.5</u>	Windwiper	ST 46 Plasma	Zinger 12x 4 3/8-3.5	66'	15% Nitro
2.	Reg Towell	NSW	<u>1008</u>	966.5	<u>1007.25</u>	950	Caudron, SeaFury	Saito 72, 56	Berringer 14x 7 wood	66'	10% Nitro
3.	Joe Parisi	QLD	968.75	<u>974</u>	918	<u>1022.5</u>	Own Design	Saito 72	Eather 13.5x5 2B UC	66'	20% Nitro
4.	Murray Howell	NSW	<u>973.75</u>	973.25	<u>1000.5</u>	500	Yatsenko Shark	Retro Disc. 60	Andre 13.25x6.25-5.75	67'	0% Nitro
5.	Brian Eather	NSW	<u>1031</u>	983.25	934.25	<u>935.75</u>	Firecracker 16	Stalker 61	Eather 12.5x5 3B	67'	20% Nitro
6.	Dallas Hanna	NSW	<u>932.75</u>	906	946.75	<u>1002.5</u>	110% Grondal	MVVS 51 RE	Eather 11.5x5 2B	67'	5% Nitro
7.	Frank Battam	NSW	<u>963.75</u>	191	842.25	<u>969.5</u>	Yatsenko Acrobat	Retro Disc. 60	Yatsenko 13.5x6.5	66'	0% Nitro
8.	Doug Grinham	VIC	<u>933.5</u>	887.5	<u>965.5</u>	959.25	Mod Hot Dog	Stalker 61	mod Hawk 13x5.5	67'	10% Nitro
9.	Tony Bonello	NSW	<u>910.75</u>	873.75	<u>965.5</u>	DNF	Enigma 3	Saito 56	mod Eather 14x5 2B	66'	12% Nitro
10.	P.J. Rowland	VIC	<u>951.75</u>	847.5	899.25	<u>914</u>	'57 Nobler	Stalker 61	Eather 12x6 2B	60'	20% Nitro
11.	Bruce Hoffman	NSW	903	<u>907</u>	907.5	<u>944.5</u>	Firecracker 16	Saito 56	Eather 14x5 2B UC	67'	13% Nitro
12.	Mark Ellins	VIC	767.75	<u>896.75</u>	879.25	<u>914.5</u>	Jazzzer (Grinham)	Stalker 61	Eather 12x5.75	65'	10% Nitro
13.	John Elias	NSW	<u>872</u>	820.5	606.5	<u>653.25</u>	Howling (OD)	RoJett 65	Eather 12x6 3B UC	66'	15% Nitro
14.	Colin Collyer	VIC	<u>657.25</u>	614.25	DNF	DNF	Warb Chipmonk	Fox 35	?	?	?

### F2B AEROBATICS – ADVANCED

	State	rd 1	rd 2	rd 3	rd 4	'average'	Model	Motor	Prop	Lines	Fuel
1.	Steve Masterton	NSW	<u>818.5</u>	758.0	<u>849.83</u>	DNF	Hot Dog (Eather)	Stalker 61	Eather 12x5.75 3B	67'	20% Nitro
2.	John McIntyre	NSW	733.0	<u>771.0</u>	<u>776.0</u>	732.67	OD Macromaster	ST 60	Eather 12.1x5.75 3B	63'	13% Nitro
3.	Steve Todd	NSW	<u>750.17</u>	474.67	<u>747.0</u>	DNF	mod Tucano	ST 46	mod Zinger 11x5	65'	10% Nitro
4.	Peter Anglberger	SA	<u>682.33</u>	674.0	<u>796.33</u>	678.17	FW 190	ST 46	Hawk 11 6	64'	5% Nitro
5.	Andrew Heath	NSW	623.83	<u>670.83</u>	<u>738.17</u>	DNF	Enigma Bonello	ST 60	Eather 12x5.5 3B	66'	10% Nitro
6.	Robert Graham	NSW	716.17	<u>728.0</u>	<u>586.5</u>	DNF	Genesis	ST 46	Zinger 11x5	?	5% Nitro
7.	Robert Edgerton	QLD	<u>633.67</u>	500.33	DNF	<u>500.67</u>	Nobler	Himark B/less	Fibre 12x6?	60'	4000mAh Lipo
8.	Warren Leadbetter	NSW	410.5	<u>532.83</u>	532.67	<u>563.83</u>	Vector 40	LA 46S	Hawk 10x6	60'	10% Nitro
9.	Peter L. Rowland	VIC	<u>462.33</u>	444.67	<u>484.5</u>	DNF	Jaguar (PJ des)	Stalker 81	Eather 12.25x7.25 3B	65'	20% Nitro
10.	Ken Taylor	VIC	172.5	<u>424.33</u>	<u>323.5</u>	DNF					

Expert and Advanced F2B CD – Peter Rowland.

Note 'average' = (the best score of rounds 1 and 2 + best score of rounds 3 and 4) / 2

### VINTAGE STUNT

<u>VINTAGE STUNT</u>		state	static	rd 1	rd 2	total	Model	Motor
1.	Doug Grinham	VIC	122	<u>332</u>	328	454	Jamison (1947)	Atwood 49 (1948)
2.	Paul Turner	NSW	118	308	<u>323</u>	441	Wombat (1949)	Sabre 29 (1953)
3.	Frank Battam	NSW	113	294	<u>308</u>	421	Hotrock (1947)	Fox 35 (1950)
4.	David Nobes	VIC	122	291	<u>296</u>	418	Guided Whistle (1950)	Atwood 49 (1948)
5.	Ken Maier	VIC	110	213	<u>222</u>	332	Ambasador (1951)	Oliver Tiger Mk 3 (1954)
6.	Ken Taylor	VIC	101	196	<u>204</u>	305	Gambler (1948)	Fox 50 (1954)
7.	Mark Usher	VIC	75	216	216	291	MercurySnr Monitor (1949)	Veco 45 (1960)

CD – Peter Rowland

Note Total = static score + best of two flights



CLASSIC STUNT		State	rd1	rd2	Best of 2 rds	Model	Motor
1.	Reg Towell	NSW	562	559.25	562	Thunderbird Mk2 (1959)	ST 46 (1965)
2.	Steve Masterton	NSW	444.75	555.5	555.5	Chizler (1965)	Brodak 40 (2003)
3.	Dallas Hanna	NSW	106	550.5	550.5	Skyscraper (1962)	ST 46 (1965)
4.	Frank Battam	NSW	506.5	547	547	Green Box Nobler (1957)	ST 46 (1965)
5.	PJ Rowland	Vic	481.5	545	545	Nobler	Stalker 61 Light
6.	Doug Grinham	Vic	523.5	513.75	523.5	Phoenecian (1964)	OS 35S Garrdner ABC P/L (1963)
7.	Dave Nobes	Vic	469.75	476.25	469.75	Shark 45	OS LA 46S (2002)



Brian Eather's Firecracker



Paul Turner's Wombat, designed by Gordon Burford of GeeBee, Sabre, GloChief and Taipan motors fame.



Murray Howell's Yatsenko Shark



Mark Usher's Mercury Monitor



Bruce Hoffman's Firecracker





## BRAZIL



**Dr. Thomas Case**  
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thomasca@catho.com.br

From: Thomas Case -  
thomasca@catho.com.br

Dear Tom:

Here is the article you requested about the Brazilian Models for this years NATs in Muncie. Hope you like it!

Thomas Case

At the 2006 NATs the Brazilians had 28 P51 Mustang stunters. There were several mishaps and we decided to improve for 2007.

Muncie will be buzzed this year by a squadron of P47 Thunderbolt stunters from Brazil for the NATs. We chose the P47 to model because of the historic contribution of Brazil in WWII with a squadron of P47s in Italy. This squadron was called "senta a pua", which means "stick it to them".

At the 2006 NATs, I had a great conversation with Pat Johnston who offered to design a P47 for our preferred 4 cycle OS .70 and Saito .72 engines. We also got the plans for Bill Werwage's P47 world champion stunter that uses a PA .61 with a pipe.

The show started to roll when our Bene Rodrigues produced a series of beautiful laser cut kits for both designs. We now have more than 25



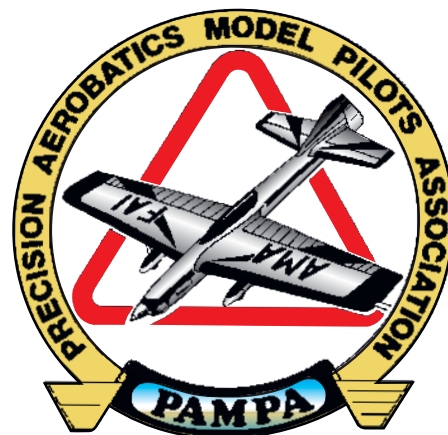
Johnston P 47s and one Bill Werwage razorback. The other photograph is a nice side view of the PJ P47. It is a "stompin" machine with an OS .70. that is a sweet flyer.

-Thomas A. Case, Ph.D.  
São Paulo, Brazil

modelers building P47's. About 18 of Pat Johnston's design and 7 of Bill Werwage's design.

In 2006 we had several flyers that could not do the pattern. To solve this problem the rules for receiving the sponsorship support require that every one compete in a contest on May 5 and 6 in São Paulo. The airplane must show good workmanship and fly the pattern in the hands of the builder. We are importing the judge for the contest from the USA. Pat Johnston will be flying down to judge the patterns and the planes.

Attached are two photographs. One shows Bene Rodrigues, Thomas Case and Thomas Case Jr with two Pat



## CANADA



**Kim Doherty**

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### An update on Electric Control Line Aerobatics

**B**luetooth, Blue Ray, HD, Wi-Fi, Broadband, DLP, 802.11n, GPS, XM Satellite, GMS, SMS, WAP, I-mode, GPRS, MMS, CDMA, TDMA, D\_AMPS, Fuzzy Logic, CMOS, MOSFET, MEMS, NEMS..... etc, etc, etc.

Feeling left out yet? I could go on for a few more pages but if you do not know the meaning and application of the terms above, you are OLD!! (and these are just the easy ones!)

This is the world of a child celebrating his\her first birthday today. They will use, manipulate and redefine these and many other standards for their own purposes in the years to come. In all likelihood, the first car they will drive will be a Hybrid or pure electric powered vehicle. The first plane they will fly in will be able to make a trip to any major airport without the pilot touching the controls except for taxiing out to the runway. If they need a new body part or need to repair an existing one, one will be grown specifically for that purpose and it will integrate with their existing body without rejection.

Children do not wear

wristwatches anymore. Instead, they look at their cell phones to tell the time. The amount of pure technological information they are asked to assimilate and make use of is staggering.

Children born today will laugh at you when they are teenagers if you try to tell them that small two or four stroke IC motors are an efficient use of technology to power a model plane. Almost everything in that child's world is electronic, portable and powered by hi-tech batteries. Right now, battery technology is evolving at the rate of about one generation per 1.5 years. By the time our newly born child is fifteen, he will likely have seen some twenty to thirty more generations of battery technology pass by.

Yes, that's how fast the world is changing. Your only decision is in how you are going to deal with the inevitable change. It is not something you have any control over. Moreover, it is not something to waste your time trying to. Life is short, far too short to erect artificial barriers to insulate ones self from the inevitable.

The state of Electric powered control line aerobatics:

Few people have seen an electric powered control line plane fly. Fewer still have flown one and even fewer still have built one. There are lots of opinions but little hard fact. So if I may, I will offer some facts and the occasional opinion on just where we are.

**Q:** How competitive is an electric powered plane vs. an IC powered plane?

**A:** It is both my own opinion and that of people you all highly respect that at the top level of competition, electric gives nothing away to other power trains. It is my humble opinion that smaller size electric power trains although adequate for sport flying are not able to match the performance on a size for size basis with comparable IC power trains. This is the result of economies of scale and power and can not be solved at the present by just building lighter.

**Q:** Is electric power more or less expensive than IC power?

**A:** If you do not already have the chargers, balancers, power supplies, extra batteries and electrical testing equipment then it is SUBSTANTIALLY more expensive. If you have all of the above and you are looking at the basic cost of a medium priced basic power train (motor, ESC, one battery, timer) then it is probably only TWICE as expensive as a similar .40 powered setup for a plane the size of a Twister. At the upper end it is about the same as full tuned pipe P.A. .65 setup. (not counting the support equipment or batteries)

The complete power train and support equipment for the most basic setup (not including plane) will cost you a bare minimum of \$400.00 U.S. And at that you will have only two batteries. Five batteries would be the bare minimum to sustain a day of flying while charging and eight to ten required to be competitive.

**Q:** What is the lifespan of the batteries in an electric powered setup?

**A:** That depends to some extent on how much you paid for your batteries in the first place, what type of equipment you will be using to charge them, the rate that you will charge them and what type of environment they will be used in. High quality batteries cost more. High quality, LiPo specific computer controlled chargers and balancers cost more. The current thinking is that a new Thunder Power ProLite battery pack should last upwards of three hundred cycles or more if handled properly.

It should be noted that if you are not well beyond the stage where you are still crashing planes, then you should not consider electric flight. LiPos have a thin aluminum foil skin and will not tolerate a crash. Further, if you are new to the game you should know that a LiPo battery can EXPLODE!! up to fifteen minutes after it has been abused either in a crash or by improper loading during use or charging. Do not put one in your car to charge or after a crash





and walk away!

**Q:** Do I need to purchase the testing equipment sometimes suggested?

**A:** Yes. This is not just for the "Pros". You can not "see" electricity and you can do yourself or someone else a lot of harm if the various components are not hooked up properly or if they are not functioning as they should. The voltages we are playing with in larger planes can hurt you. You should have a WattMeter or E-Meter and a good Digital Multimeter at a minimum and an IR Temp gun to monitor battery pack, motor and ESC temps.

**Q:** Can I save money by starting with a smaller system?

**A:** Not as much as you think and only if you never want to move to a bigger system. Remember that the most basic setup will cost you about \$400 U.S. For that, you will get small batteries, a charger and balancer that will only work with lower cell count batteries and an ESC that will not handle higher amp draws. All of these will need to be replaced at substantial cost should you wish to move up to a "full size" competitive ship.

**Q:** What happens if they change the shape, size or weight of my battery?

**A:** Therein lays a problem. The fuel for an IC powered plane always has the same shape and virtually the same weight. (Hence the design can remain the same for all time) The fuel for an electric powered plane comes in a physical form of differing weights, strengths and physical dimensions. SHOCKWAVE was only designed to work with (and can only physically accommodate) one battery, the Thunder Power ProLite 5S2PB 4200 mah brick battery pack. This pack and its technology were only four months old when I started the design. It took more than a year to design and produce the first plane. In that time, Thunder Power announced a new chemistry (TP Xtreme) and this resulted in a whole new series of weights, dimensions and strengths NONE OF WHICH

WILL FIT INTO SHOCKWAVE !! I am not complaining mind you. There is no level of performance that I need that this package can not produce, at least any that I am currently aware of or feel a great need to possess. But the day will come (I am giving it a year at best) when Thunder Power will no longer produce that battery in those dimensions. This will occur for ALL current LiPo batteries regardless of manufacturer at some not too distant point! On that date SHOCKWAVE would not be worth building again. A whole new airframe based on the new battery weight, strength, and physical dimensions would need to be designed.

**Q:** I have read that electric power trains are pretty simple compared to IC?

**A:** If you mean that you can throw a switch and the engine springs to life then yes. If you mean that there is no challenge in developing an electric power train then you are in for a rude awakening!

Starting with the battery, you must decide which form factor, the number of volts, the number of amps, the number of cells in series, the number of cells in parallel, the required "C" rating, how you will mount it, how you will cool it, how you will remove it, how you will connect it, how to break it in, how much to charge it, what to charge it with, when to charge it and how to measure its various parameters.

Brushless out-runner electric motors are complex. You can change and may want to know the impact of changing the number of poles, the number of winds, the gauge of wire, the type of wind whether WYE, DELTA, STAR, the air gap, the type of magnet, the length and thickness of magnets, stator core material properties, motor shaft support, the diameter and length of the stator, type of case material, balance of rotating parts and cooling.

The Electronic Speed Control (ESC) is no less complex but if you are going to make improvements here you will need to know some hardcore electronics and be able to understand complex logic. Not all

ESCs are made the same and not all Governor modes function the same. If you really want to have control over this environment you had better become fast friends with the guy who made your ESC since without his help, you will not achieve the results you had anticipated. Will he want to become fast friends with you? Not likely.

The timer/processor is no different. To make one yourself, you will have to know a fair bit about electronics and if you want to manufacture one then you will need to deal with surface mount technology and embedded programming.

So do you really need to know all of the above? No. But simple or lacking in challenge it is not!

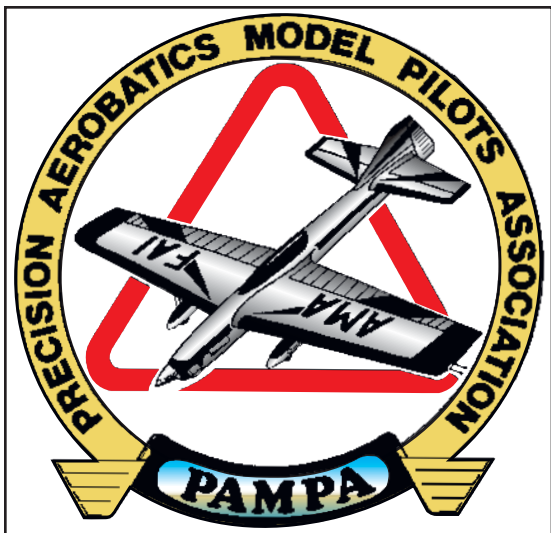
**Q:** Can I retrofit an electric power train into an existing model?

**A:** While it may be possible to mount all of the components somewhere in or on the fuselage of an existing plane, I think the most likely outcome will be a nose heavy model. This would be OK if your intent was only to test various components for future use. If you want competitive performance, you may be disappointed. Check out how the battery is mounted in the Brodak electric ARF Clown. The battery in SHOCKWAVE is mounted more than one inch inside the leading edge of the wing and the nose moment is shorter than a normal IC powered stunter.

Smaller systems do not generate as much heat as larger systems and you may get away with just mounting things where they will fit. In larger planes, the battery, ESC and motor will need to be cooled since they will be run at almost full power for the duration of the flight. There are also limitations on the length of cables you can use from the battery to the ESC and then to the motor.

At a minimum, I would suggest that you start with either a kit and modify it for proper balance from scratch or use an ARC (like the Vector 40) and rebuild the nose from the wing forward. In any case, your tail moment will probably still be too short to balance properly





without the addition of extra weight. As a benchmark to compare where you are weight wise, SHOCKWAVE weighs 38 ounces as a full take apart, fully painted 710 square inch model. The plane less battery weighs 54 ounces and with battery 70 ounces.

The best result will come from building a plane which is matched to the chosen power train and is structurally optimized for electric power.

**Q:** Are the AMA and FAI trying to eliminate the use of existing IC model engines?

**A:** Nothing could be further from the truth. I am not aware (and I am reasonably well informed) of ANY movement to limit or reduce the use of IC model engines in control line aerobatics. You see they don't have to. The society in which we live is doing a bang up job of seeing to it that if we want to continue to fly at many sites, that we modify the manner in which we do so. So if you want to fly "Shelf Line" (thats the new event where old geezers sit at Formica tables in their polyester pants and white belts and drink coffee from melmac cups while engaging in exciting conversation about the models that line the shelves of their hobby rooms) then just stick your head in the sand. Personally,

I want to continue to fly my models ON the CIRCLE at the PARK. That said, I think it will be some time if ever before the above organizations need to enforce a ban on IC engines. I fully intend on going to the VSC someday soon with a sparker.

**Q:** Are the rules governing the use of electric models slanted in their favour?

**A:** If you mean have the rules been modified to enable electric powered models to start and stop on command and thus be able to be used the answer is yes. If you mean is it a good idea to promote the use of modern technology to our new born child above, the answer is also yes. If you mean do they enjoy an unfair competitive advantage over existing IC engines the answer is no. At best, they are on a par. If you can think of a model that can not be powered in a competitive manner with a .90 two stroke and tuned pipe, then you are not current on the state of modern IC model engines. After all, the motor is only turning the prop, it is not moving the handle.

The rules are constantly under review and if ANY unfair advantage was perceived by the rules makers, it would be acted upon. This is the case with the rationalization of engine displacements to .90 for both two and four stroke.

**Q:** Should electric power be allowed in OTS?

**A:** IMHO, Unless and until the

society in which we live or some other authority tells us we that we can not fly our old IC engines or we simply run out people interested in flying the event, I do not think that electric should be permitted. You see as much as I embrace the hi-tech world with open arms, I truly love the spirit of an event that was enacted to preserve the past. No electric in OTS. I have no issues with it being used in Classic although I think you would have a hard time putting a competitive package together.

If you love model aviation or all of aviation as I do, you will realize at some point that you have a responsibility to protect and preserve the best elements of what you have participated in and pass them on to someone else hopefully much younger than yourself. If control line flying survives for any great period of time, it will be with battery powered electric motors on the plane and young people who know what all of the gibberish at the top of this post is all about.

-Kim Doherty





## ITALY



**Bruno Massara**

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0916884157

volovincolatosicilia@libero.it



-Engine Supertigre G.49

-12/6 wood prop

-weight 71 ounce

-Homemade cromed muffler

right and inverted, and inverted fly.

Thank you in advance,

- Bruno Massara

-The Boeing can to do the loops,

Mr. Tom,

My name is Bruno Massara and I am sending you some photos that I would like to see in the following issue of Stunt News, if possible.

Today I have sent Mrs Shareen Fancher my renewal.

In this CD there are two cases of photos and I hope you will be interested in publishing them in the following Stunt News issues.

Please, choose the photo you like more.

-In "Bruno Massara's HURRICANE for STUNT NEWS" there are some photos of my latest semiscale stunt model.

The numbers of my Hurricane are:

-Full stunt semiscale model

-Wing span 59 inch

-Engine Supertigre ST .60

-13/6 wood prop

-weight 70 ounce

-Homemade cromed muffler

-Full adjustable

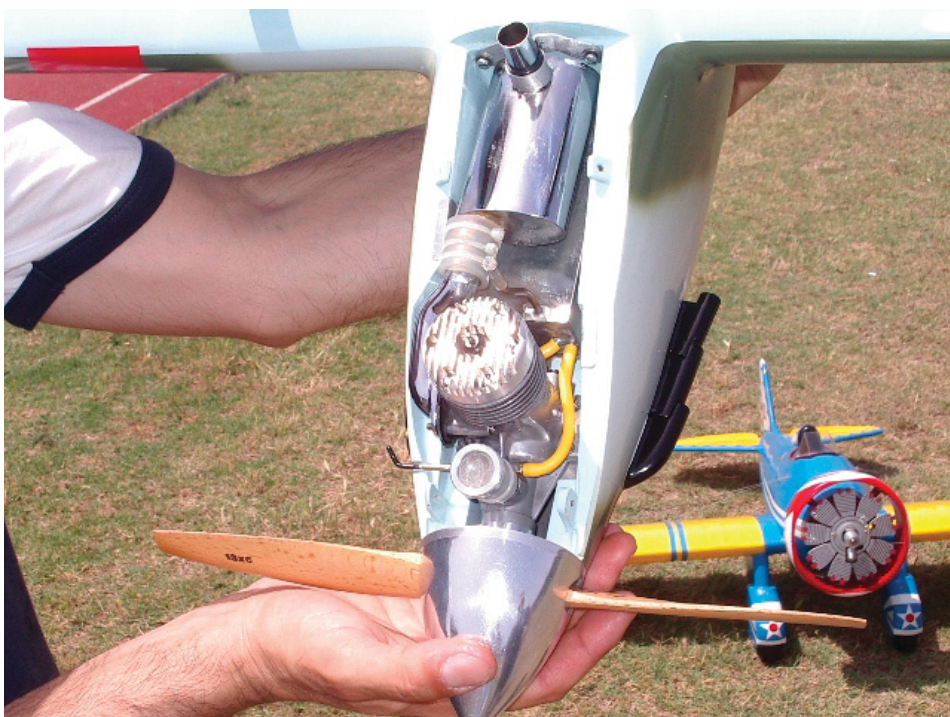
- In "Luigi Massara's BOEING P26A PEASHOOTER for STUNT NEWS" there are some photos of Luigi Massara's latest scale models. Luigi Massara is my father.

The numbers of Luigi's BOEING P26A PEASHOOTER are:

-Wing span 53 inch









## SOUTH AFRICA



**Keith Renecke'**

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### The "secrets" of the Stunt Hemisphere

**WARNING!** This is not a highly technical article full of sines, cosines and other spherical geometry formulae. Rather, this is a straightforward, logical article on the basic principles that govern the flying of maneuvers of control-line model airplanes. A good understanding of these principles will help you to understand the stunt rules when flying and also judging precision aerobatics. The very title "Precision Aerobatics" denotes a certain expertise in this field. The underlying principle of stunt competitions is that the pilots who perform the maneuvers closest to the rule definitions, should get the highest scores. This would logically mean that the pilots and judges must not only both have a good understanding of the rules, they must both have the same understanding of what is required. This is sadly not the case in many national and international competitions.

We are told that the main problem is that this is a subjective sport. While all of us accept this premise, let us make sure that the word "subjectivity" is not used as an excuse for a lack of understanding. As fliers and judges, we all need to be in sync. We should have the same understanding of what the maneuver shapes are,

and how they should appear from the perspective of various view points. Our stunters are only single axis (pitch) flying machines. There are no roll or yaw axes to worry about, so why do we have such misunderstandings or misconceptions about how the maneuvers should appear, especially when it comes to the judges viewpoint? The simple answer is that it is because C/L model airplanes fly around in circular fashion, and this requires understanding the principles of spherical shapes. Sounds complicated? Well, it could be, but for our purposes, we only need to understand the basic principles. So take heart as I'm going to show you how it all works.

Right up front, let me give you the objectives in writing this article.

1. To show exactly how shapes are drawn on spheres.
2. How our stunt maneuver shapes are made up from a few basic spherical shapes.
3. How the maneuver shapes are viewed from any viewpoint.

#### The flight path of a tethered model airplane

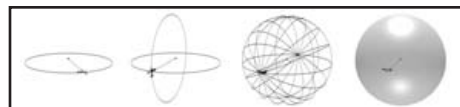


Fig.1

Our C/L models are rotating around a central pivot point, and in our case it is the pilot. It stands to reason that this flight path must be circular. If we could leave a trace of this path in the air, and we flew in all possible directions, then we would eventually end up with a sphere. These stages are shown in Fig.1.

So then, the flight path is more correctly termed spherical than circular. We refer to the part of this sphere that we fly in, as the stunt "hemisphere", because we use a little more than half of the sphere. The "little more" comes from the extra bit from level flight down to the ground level. Now, maybe it makes sense when we hear about our models moving through the pattern in "hemi-spherical arcs." (Use this phrase to impress your friends!) We have some very basic, but absolute rules that govern shapes on the surface of spheres, and this will help on our journey to gain the necessary understanding.

#### Rules of paths on spheres

We are only interested in paths on

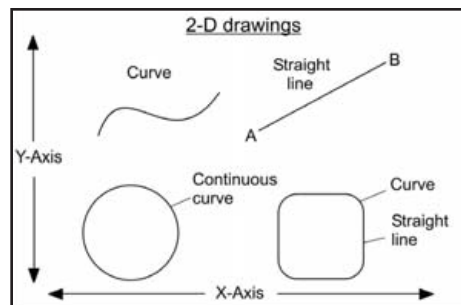


Fig.2

the surface of spheres for our type of aerobatics. The bit inside the sphere is only interesting (maybe "frightening?") if the lines go slack, and then the language used to describe the flight path can no longer be described in rational terms! This is a family magazine.....right? We are used to seeing the maneuver shapes in the rule books on a flat, printed page. This is termed a 2-D (2-Dimensional) drawing. In geometry, this is referred to as "plane" geometry, simply because the drawing is on a flat plane. The two axes are the X, or horizontal axis, and the Y, or vertical axis. When we draw maneuver shapes, you will notice that they are made up of two different paths, and these are curves and straight lines. The simple definition of a straight line is the shortest distance between two points. Fig.2 shows how these paths are drawn on a flat surface, and also illustrates a loop and a square with curved corners.

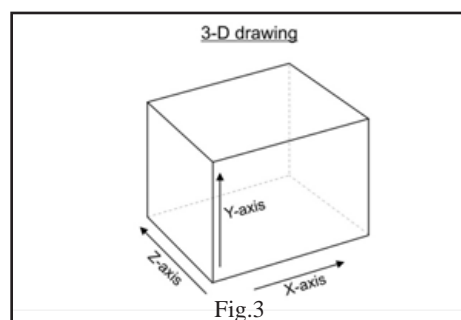


Fig.3

If we now add depth to our drawings, we have to add a third axis, which is called the Z-axis. This brings us into the fascinating world of 3-D (3-Dimensional) graphics. Fig.3 shows a cube drawn in 3-D format. In the real world, we see everything in three dimensions, so you will find it most interesting to learn a little more about how this all works.

O.K. so that's pretty simple, but what about paths on the surface of the sphere? This is a good question, seeing that our stunt models can only follow circular paths on the sphere's surface. Here then,

are the basic rules of spheres:

**Rule 1: All lines on the sphere surface are circles.**

The flight path of our C/L models can only be circular, so it makes perfect sense to believe that all of our maneuver shapes will be formed by some kind of circle. This is a very important principle to remember. Circles belong to the sphere. They are "family!" Round loops, for example, in our pattern are just circles, and they fit the surface of our sphere perfectly.

There are two different types of circles on the sphere surface that we need to get to know and understand. The great circle and the minor circle. The minor circle is also referred to sometimes as the small circle. These terms are used mainly in global navigation, but please don't let these technical terms scare you. They are easy to understand.

#### Great circle paths:

The great circle is simply the widest circle that will fit the sphere. If you took a flat plane as a knife, and cut the sphere in a straight line right through the geometric centre, you will have two identical halves. The edge of this "cut-line" is a great circle path. This is shown clearly in Fig.4 on the left.

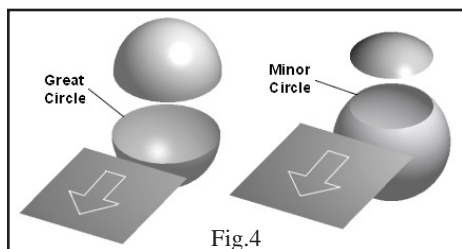


Fig.4

#### Minor circle paths:

Anytime you slice the sphere, and miss the centre, then the circle that is formed will be smaller, and is called a minor circle. This is shown in Fig.4 on the right. So there we have it. There are only two paths for shapes on a sphere's surface: Great and minor circle paths.

**Rule 2: There are NO straight lines on the surface of a sphere**

If we take a straight pole, tube, or stick, and try to fit this anywhere on the surface of a sphere, you will soon understand that it simply does not fit anywhere. On a flat surface, as previously stated, a straight line is defined as the shortest distance between two points. There is however, an equivalent of a straight line on a spherical surface, and

very conveniently, it is also the shortest distance between two points.

Take a ball, and draw two dots on it that are a reasonable distance apart. Now take a piece of string, and pull the string tight between the two points. The photo in Fig.5 shows how this looks.



Fig.5

This is the accepted "straight line" in spherical geometry, because of the shortest distance principle. If you continued with the string line in the same direction, going right around the ball, until you arrive back at the first point, you would have followed a complete great circle path. Another way to describe the great circle path of a C/L model, is a path in any direction, with no heading change. So there we have the next basic rule:

**Rule 3: The equivalent of a "straight line" on our sphere's surface is the great circle path.**

Minor circle paths are NEVER the shortest distance between two points, and are therefore not used as an acceptable straight line path in spherical geometry. If we look at how the earth, or globe is mapped, the horizontal and vertical lines are called "Latitude" and "Longitude" lines, respectively. The longitude lines are all great circles, and the latitude lines are minor circles, except for one. Which one? The equator is the only line of latitude that is also a great circle, simply because it is at the widest point of our sphere. This is illustrated in Fig. 6.

We don't need to understand global navigation, or cartography, although learning about these subjects will help to understand the definitions of spherical shapes. I continue to admire the early map-makers that figured out how to map the surface of our globe without being able to fly and actually see the shapes. The

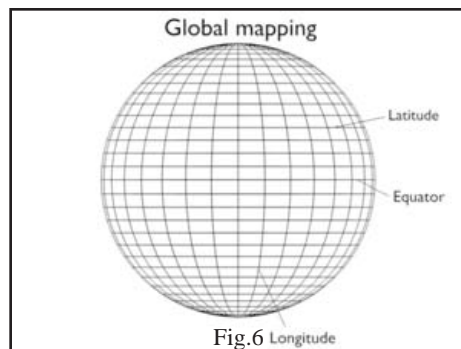


Fig.6 Longitude

ancient Greeks, like Archimedes, figured out the basic principles of spherical geometry. Projecting these global shapes of all of the countries onto a flat map is a rather complex business, and fortunately we do not need to know these principles here.

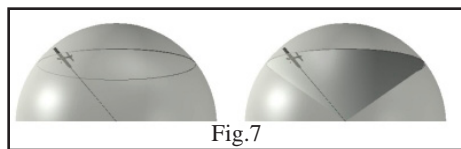


Fig.7

If we could fly inside a sphere that was just the right size so that the outer wing of our model could slice through the surface, we would be able to "cut-out" the exact shapes of our maneuvers. Flying around any great circle path, would cut us a neat flat disk. What happens when we fly the path of a minor circle? Have a look at Fig.7

Our model with its lines from the centre of the sphere, flying around at a constant elevation angle, has sliced out a cone. The pilot would simply be performing an overhead loop as shown in our drawing. Please note that although the model illustrated here is flying parallel to the ground, it is NOT a "straight line" path. Why not? Because it is a minor circle path and not a great circle path. The stunt rules are not very clear on this point, but it is important to understand the differences between these two distinct paths. They are not interchangeable. Any loop of a given size, will form a cone. It can be performed anywhere on the sphere, and it will always look the same from the centre of the sphere.

Summary: Let's quickly review what we have learned in this important first section.

1. All paths on the sphere's surface are circles
2. They are either great circles or minor circles
3. The accepted equivalent of a





straight line is the great circle path

How are the maneuver shapes made from these basic flight paths?

The most basic maneuver that sets the foundation for a large part of our stunt pattern, is the loop. The rules require that the bottom of the loop starts at level flight, or 5ft., and must be round with the top at 45 degrees. In other words, this is a cone with an arc of 45 degrees. Most judges will tell you that there are very few pilots that can perform good round loops that are the correct size and shape, so flying and judging correct loop shapes is in fact a big part of understanding the stunt pattern. In fig.8, I have drawn two 45 degree arc loops complete with cones to show how they fit the sphere. Please note that it does not matter where you place the loops, they always fit perfectly on the surface of our sphere.

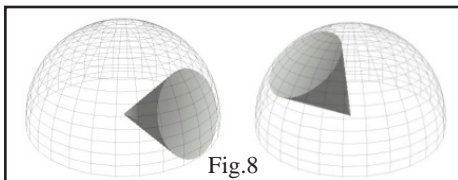


Fig.8

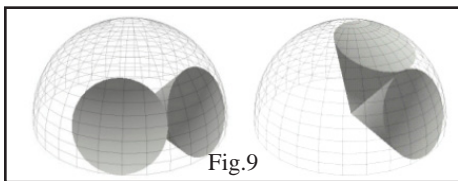


Fig.9

Here's the neat part! Place two of these 45 degree loops together side by side, and you have the horizontal eight. Place one on top of another, and you have the vertical eight. Fig.9 illustrates this.

Now, what about the maneuvers with the straight sides, like the squares and triangles? Well, now that we have established some basic rules, it should be fairly straightforward to work this out. Let's look at the triangle first. The rules call for equal length "straight" sides that are joined together with 5 ft. radius corners. The sides are therefore parts of great circles, and the corners parts of minor circles. Fig.10 shows this clearly. The hourglass by the way, uses similar lines, but extends them. It is almost like two triangles, one on top of

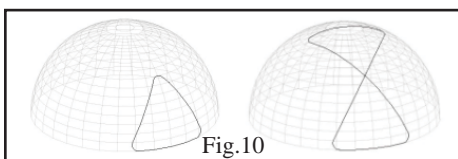


Fig.10

the other. There is a subtle difference in the hourglass that causes the angle of the sides to be slightly different to the triangle. See if you can spot this.

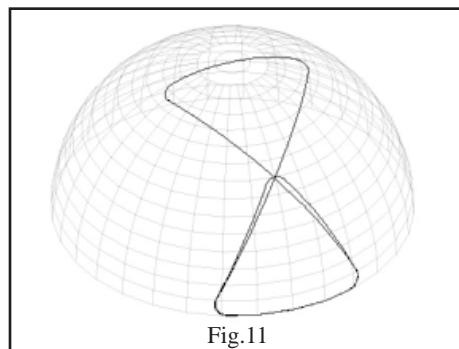


Fig.11

The basic difference is that the triangle has the top turn at 45 degrees elevation, so therefore the angles of the sides, in relation to the bottom, have to allow for this turn radius. Fig.11 shows this, and please be aware that because we fly much wider radius corners than 5 foot, this difference in the side angles, will be even greater than the drawing shows.

These angles are not easy for the judges to see, so the critical points to look for in the triangles, will be equal angles, and equal length sides. The FAI rules also state categorically, that sharper turns should be scored highest. Wide radius corners may look smoother, but they do not define the shape as well as an accurate sharp turn. The basic principle behind this, is that the wide radius corners do not leave much space for the straight lines, so the maneuver will look more like a series of curves. Being aware of these finer details will increase our understanding of the perspective views of each maneuver.

Those were the easy ones! Now let's have a look at the square maneuvers. Basically, a true square cannot be drawn on the surface of a sphere. By this, I mean a square with sides that are equal in length, opposite sides parallel, and four equal angles, as we would draw it on a flat piece of paper. There are a number of ways to draw "square-shaped" maneuvers on spheres, and indeed, since the early days of stunt, there have been various shapes that have been tried.

The latest rule definition of the square loops has the side's vertical to the base of the hemisphere, and the tops parallel to the ground. The older AMA and FAI rules, called for squares with

equal length sides. The latest rules make more sense (to me at least), because just like the round loops can be combined to form horizontal eights, you can combine two squares to form the square horizontal eights. This certainly simplifies things for both pilots and judges. Fig.12 shows the square on the left, and a combination to form a square eight on the right. I've left out the 5 ft. corners for clarity. In reality, the tops of the square maneuvers are flown as "straight lines" (great circle paths), and not as "parallel to the ground." This is most likely due to the radius of the corners being much greater than the rule-book 5 ft. The tops are therefore just too quick for the pilot to follow the curve of "parallel to the ground." I have videos of the best fliers in the world that I have traced, frame by frame, and NOBODY flies this line to the rules. They all fly this as a straight line.

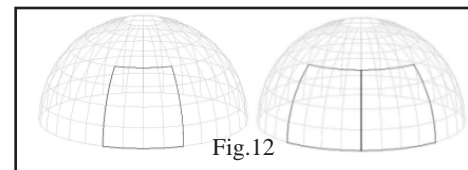


Fig.12

If you look carefully, you will see that the bottoms and sides are great circle paths, and the tops are minor circles, because they are parallel to the ground. I have seen many articles written about how to perform squares that look like proper squares to the judges. I have not personally ever seen any rules that state this, but I know that there are many judges and fliers that still believe that this is the right way. Performing a "square" loop on a sphere that actually looks like a square from a point outside the sphere, is indeed possible, but it is very difficult, and then if the viewing position was shifted, it would no longer look square. This of course, would cause plenty of problems with the system of five judges that is presently in use. Which one of the five judges do you try to impress? The pilot would have a tough time trying to spot which judge is standing directly in the right spot. The newer rules square loop has a top that is considerably shorter than the bottom, but it makes more sense because the vertical legs are truly vertical to the base of the sphere.

So there you have the basic principles, and how to apply them. Round loops make up the biggest portion of the stunt pattern, and the other shapes are simply

combinations of the spherical equivalent of straight lines and curves. Now we can go on to how these shapes appear from various points of view.

### Seeing everything in perspective

This sounds like the "story of life!" Now we have arrived in the area that has most of the misconceptions about how our stunts are supposed to look. If you have played around with technical drawings and 3-D graphics, you will be aware of the various views that are used. Plan, isometric, orthographic views, etc., are all used depending on the particular application. When we refer to the pilot's view, or the judge's view in our stunt flying, we are talking about a view from the perspective of a specific point. This is quite naturally termed the "perspective" view. We have two eyes, but in relation to the size of a 140 foot diameter sphere, our eyes are only around 2.5 inches apart, and can therefore be considered as a single point. (Yes, I do know that some people's eyes are a lot closer together!) Drawing perspective views of three-dimensional objects onto a flat, or two-dimensional surface, is rather complex and time-consuming, so I prefer to use the PC to do this. The basic principle is that light travels in straight lines, and objects, or parts of objects that are closer to you, will appear much bigger. The closer that you are to the object, the greater the perspective of size will become. For judges, it is imperative that they understand this point well. It is also a most interesting thing to learn. If you are like me, and like knowing how things work, then I hope that I can explain the basics of this complex subject to you in simple terms. So here goes....

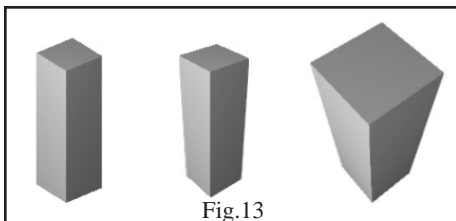


Fig.13

In fig.13, you will see three views of the same extended cube, sort of like a high-rise building. The view on the left is like an isometric view in a technical drawing, where the sides are all parallel, and the top and bottom have the same size. The middle view shows a perspective view from a similar distance, and you can see the difference in perspective already. The

sides widen out to a bigger top, because the viewpoint is from a point higher than the top, and still further from the bottom. The view on the right, shows that we have moved the viewpoint much closer to the top of the cube. Now you can see just how much change there is when you view an object from close up. If you fly over a big city, low down, you can see this effect clearly when you fly over the high-rise buildings.

Our judges sit pretty close to the stunt circle, so maybe now you can understand and appreciate just how difficult it is to be a good judge. I'm sure that all of us stunt people have watched a stunt pattern from the downwind side of the circle. Have you noticed how weird the maneuvers look, especially the "straight-side" stunts? Take a walk around the circle while someone is flying the pattern, and see how everything changes perspective from the different angles. Sounds like judging is an impossible job, doesn't it? Well take heart! It's not so difficult once you have a good understanding of the basic principles. It's just like everything else, with a good understanding and lots of practice, it is not difficult at all, and to top it all, it is really incredibly interesting. I'm not one of those that advocate the idea that judging is a boring, thankless job. It is an essential part of our sport, and when I train judges, I always try to make it as interesting as possible.

Fig.14 shows a view system that is used in many judges training manuals that I have seen through the years. The so-called "judge's view" on the right is derived from projecting parallel lines across from the side view. This is called an "Orthographic" view, and is used in technical drawings in order to measure the objects accurately. I've used the vertical eight here because the vertical maneuvers go right up to the apex of the hemisphere and exaggerate the perspective problem. Notice how small the top loop looks in relation to the lower loop. Just remember that the lower loop of the vertical eight is exactly the same as the normal inside, or outside loops. Look at the size of this loop in relation to the overall size of the sphere. What do you reckon? About 70% of the height? The pilot sees both loops the same size, and the judges are not that far from the centre, so there is obviously a problem with this view if it is to be put forward as

the judge's view.

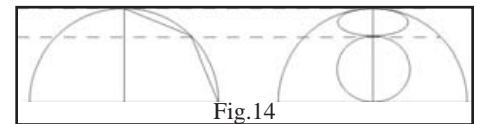


Fig.14

If you had a 70 ft. diameter eye, you could most likely view this as shown in fig.14, but unfortunately, we don't, so we need to be careful not to fall into this trap. If the judges were to look from the centre of the circle, they would see exactly the same as the pilot. Now, and here is the key to this whole discussion, move the viewpoint from the centre slowly outwards until you stop at the normal judging position just outside the circle. If you project the views from this point onto a flat plane as you move, you will project exactly what a judge can expect to see at each point. The principles of projecting a perspective view are a little more complex. Don't let your eyes get boggled by all the lines in Fig.15. Just take it one line at a time.

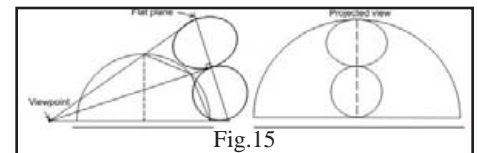


Fig.15

The side view on the left, shows the single viewpoint and lines to the vertical eight side view. If you take a flat plane that is perpendicular to the line to the centre of the eight, and project lines all around the shape onto this plane, you will get the correct perspective view. The plane can be placed anywhere on this centre line. You could in fact, fix a pane of glass or clear plastic in front of your eyes on this line, and trace the shape of the vertical eight with a felt marker pen, in real time. Of course, the glass must be firmly fixed so that it won't move, and you will have to draw fairly well to follow the model. Charles Mackey used a similar system 40 years ago in his "Stunt Judging machine." The article in a 1963 Model Airplane News shows how Mr. Mackey drew the maneuver shapes onto glass for the judges to hold up in the line of view, and then to compare the shape to the actual maneuver. The clever method used to draw the perspective shapes, was to project a pin-point of light from the judges viewpoint through a wire-frame hemisphere with wire maneuver shapes tacked onto it. This was all projected





onto a wall with a piece of paper on it, and then simply traced. Have a look at fig.16 where I have generated the Mackey system with my 3-D software. I left out shadows for the wire hemisphere parts to show the projected shape a little better. We are really spoilt today with PC graphics! Does the projection look like the vertical eight in fig.15?

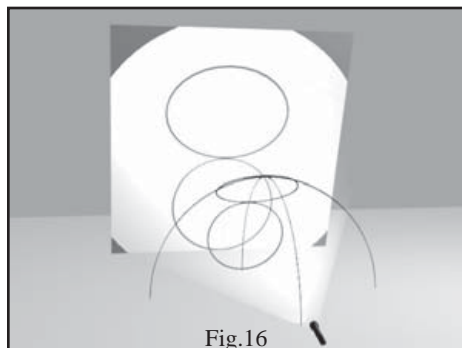


Fig.16

The round maneuvers with the tops at 45 degrees do not suffer as much from this distortion. The loops are indeed tilted slightly towards the judges, but because of the line drawn from the top of the loop down to the single viewpoint, it only makes a small difference in how the perspective size looks, until of course, the tilt angle is greatly increased. All of the vertical maneuvers will look totally different from the projected plan (orthographic) view of fig.14. I've drawn some of them in fig.17 for you to see the difference.

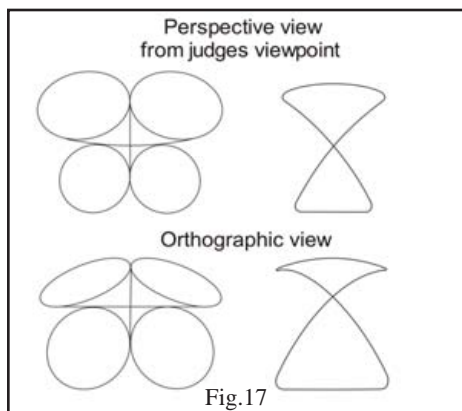


Fig.17

It makes a big difference doesn't it? You will find that once you understand this principle well, then it's not that difficult to work out how any of the shapes look from any angle. The important thing to remember when observing the pattern from outside the circle, is that every path that the model draws in the sky, will be a part of a circle. A good thing to do is to practice looking at circles from all angles.

Look at things around you in general. Round stop signs at the side of the road, CD's, the openings of the glasses, and mugs that you drink out of. You'll soon start seeing everything in a different "perspective!"

Now for the "sensitive" part! How do things look from the pilot's perspective? From my many e-mails to a large percentage of the stunt community all over the planet, I have found that there are some rather strong viewpoints of what the pilot actually sees. The latest FAI and AMA rules describe all the maneuvers from the pilot's view, so I think that it is relevant to clear up this point. Rather than get into more heated debates over what every pilot can or can't see, I would rather stick to the basic principles of the sphere. No matter how we think we see the shapes, and how we draw them in the rules, we must remember that they are inter-related. We must balance the books properly! We should be able to match the 2-D with the 3-D views, and also the judge's view with the pilot's view, when everything is brought back to the sphere and its basic principles.

The so-called "pilot's view" is in fact, a bit misleading, because it can be changed by the position that the pilot holds the control handle when flying. I would prefer to state that this view should be termed as nothing more than a perspective projection from the geometric centre of our flying hemisphere. The viewpoint is at the same basic distance from the sphere surface, because of the length of the lines, so the pilot's view is "almost" the same as a drawing on a flat plane. I say "almost" in order to caution readers that that the surface of a sphere is curved in all directions, and can never be thought of as a flat plane. The pilot's eyes are also not looking exactly down the lines from the centre of rotation. The important point to remember is that the pilot sees virtually no spherical distortion.

Let us go back to the "circle family" and use our round loop as an example. The pilot sees any round loop as exactly that, a round circle, in any position. The curved path is simply that of a minor circle. If you fly a 90 degree arc loop directly in front of you, or you fly it directly overhead, will it look different? How can it look different, if it is exactly the same loop? Just remember that flying

around parallel to the ground at 45 degrees, is the same as flying a 90 degree arc loop directly overhead. (Remember fig. 6) Sooooo.....if you believe that flying parallel to the ground is a straight line flight path to the pilot, then I am afraid that you are disagreeing with the rules of spheres. If you don't believe me, then just ask the local stunt champ that has been winning for a few years. They know that this point is absolutely 100% true. Why is this? Simply because they just have to look upwards at their halo to see this curve all the time! Jokes aside, this is one of the misconceptions that regularly pops up, and causes many of the problems when we try to train judges from these 2-D drawings. We could debate this point at great length, because it is fairly obvious that some pilots see things differently than others. That is also one of the reasons why some pilots can fly the pattern better than others. The pilot has to "see" shapes in the sky that are not even there, and then translate this shape in their minds, into hand movements that will trace this particular shape. Take the theory of your particular belief, test it against the sphere, and then test each viewpoint the same way. Draw it in 2-D, wrap it around a sphere, and then test the perspective from inside and outside the sphere. All the views should agree, and balance out against the basic principles of spheres.

There are a few basic errors in our present rules that have been around since the very first world champs in 1960, and possibly before. I started to use 3-D computer graphics in order to create a better training system for judges. In doing so, I had to reduce each maneuver down to very small steps so that I could animate them onto a sphere's surface. I soon discovered that some of the maneuver descriptions could not be drawn on a spherical surface. This was a bit of a shock to me, and I started writing to everyone that I knew that was involved in the rules and also that had many years of experience in stunt. The results of my search were rather disturbing, to say the least. I found many different viewpoints of the same set of rules. The common thread was "Leave well-enough alone.... don't buck the system or rock the boat.... it's all subjective anyway etc. etc." I plugged on regardless, and eventually created the CL-Sim program that has

been available on the internet now for a few years. I am happy to say that I have been able to help with the new FAI rules in sorting out some of the problems, and I am still involved on a regular basis in the rule making process. Charles Mackey found the same problems that I found more than 40 years ago without using computers. He pointed out the errors in the 4-Leaf Clover description right back then, and no notice was taken. I am still at work on the same problems and slowly but surely I am making progress with the kind help of some very good people. I find it difficult to illustrate these points well in a static, printed article like this. When I use 3-DPC graphics presentations with many animations, especially on large screens, then it's dead easy to show clearly how everything works.

I hope that this article will help the readers to understand some of the interesting basics of the stunt hemisphere, and find it useful in your training programs. I feel that we are indeed

spoil these days with modern computer graphics, and that we should put this to good use to improve the training of our judges. Judges, just like pilots, need continuous training and practice, and instead of criticising judges, I believe that it is our duty to create better and more interesting training systems. Judges compare what they see pilots perform, to a perfect 100% to-the-rules shape. This logically means that judges need to know exactly what the shapes look like and how they will appear from any angle. Seeing that no human pilot can perform a perfect shape, 3-D simulations can provide this amazing ability. Let's make use of this technology. If you would like to download the simulation, Igor Burger has kindly made it available on his website at the following internet site links:

[www.slovanet.sk/orsia/CL\\_Sim\\_manual\\_June\\_05.doc](http://www.slovanet.sk/orsia/CL_Sim_manual_June_05.doc)

[www.slovanet.sk/orsia/CL\\_Sim\\_1-0.exe](http://www.slovanet.sk/orsia/CL_Sim_1-0.exe)

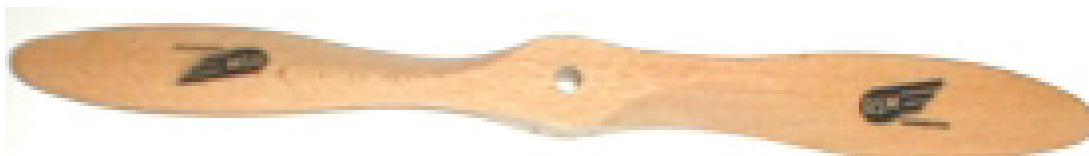
In conclusion, I would like to express my sincere and grateful thanks to the following people. Keith Trostle, for his incredible patience in answering my many e-mails over the last few years, and also his invaluable support. Pete Soule, for his mathematical work done on our stunt maneuvers, and for explaining these principles in ways that even I could understand. Igor Burger, for his technical help, but mostly for his continued support in developing some of my graphic work and simulations. Ted Fancher for his amazing ability to explain all concepts of stunt so simply. Claus Maikis for his help with putting graphic shapes into perspective. Andy Sweetland and Peter Germann for their dedication and work in trying to improve the F2B rules. There were many others, and thanks to all of you for your help, and I hope that you the reader will find this information useful and informative.

-Keith Reneclé'

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## SWITZERLAND



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### Electric Power for Control Line Aerobatics; Status View and Outlook

The 2006 homologation of electric power sources for c/l stunt models by the international rule making organizations is of fundamental importance for model flying in general because it allows the operating of controlled flight aero models on small fields close to family homes or on conveniently located schoolyards. The increased visibility, the ease of handling and the quiet operation of powered Aeromodelling will not remain without influence on newcomers of every group of age. Understanding the driving force serious competition flying exercises on leisure or sports activities in general, the rule makers have drawn up a set of rules for electric c/l stunt avoiding restrictions wherever possible.

The following is a personal view of where, in terms of electric stunt, we are today in February 2007 and a statement of theory describing a new approach for adaptive power control of electric motors to be used in control line aerobatic model airplanes. While I address myself to the electric c/l pioneers having gone very far in remarkably short time, I am hoping that this article will be read by electric flight professionals outside of the control line



At the "Cirie 2006" Contest in Italy, Giuseppe Casaroli and his electric stunter

scene, too. Tapping their knowledge could prove to be of great value for the c/l community. For readers possibly not being fully aware of the technical background of c/l stunt, I have added a couple of basics helping to understand the very particular power management required in control line stunt. The perhaps 2,000 active control line stunt flyers out there may pardon me for repeating what is common knowledge for them and for hopefully minor inaccuracies.

### Internal Combustion Engines Driving Control Line Stunt Models

C/l stunts are flown, tethered and controlled by a pair of 21 m (70 ft) long steel cables (lines), on the virtual surface of a hemisphere. The model, typically at a speed of 90 Km/h or 56 mph, thus generates considerable line pull. Controlled by mechanically deflected control surfaces, the model is able to reach every point on the flying hemisphere. However, the more its flight track approaches the upper centre of the hemisphere, the more gravity counteracts centrifugal force and line tension. Finally, when reaching the top centre of the hemisphere in knife-edge flight, the remaining line tension may not be sufficient to fully deflect the control surfaces. In order to avoid the resulting loss of control, the initial level flight speed of the airplane must be high enough to leave enough line tension when flying on top, and/or it becomes necessary to increase speed with altitude. At this point it is important to know that the current rules for c/l stunt do not allow active control of piston (IC) engine power in flight. Flyers therefore do adjust the RPM of their motors on ground only, making use of a number of passive

devices, such as regulated fuel flow tanks and RPM limiting tuned pipes to cope with the need for more power when flying higher on the hemisphere and less thrust when descending. Passive control devices alone are not sufficient to get properly modulated power output and it takes specific engine design to succeed, too. All in all, the IC power train and its running characteristic is the essential element in c/l stunt and mastering it under various conditions is not only absolutely vital, but it can be quite frustrating for newcomers, and sometimes experts alike, too.

### How Does the Electric Motor Perform?

As far as available power and total weight are concerned, modern electric power trains are fully competitive. Using commercially available components, it is fairly easy to run an electric motor, with its RPM set on ground before take-off and over an adjustable period of time (typically 6-7 minutes), and then shut it off for landing.



Note potentiometer to set RPM on ground...

On serious competition level, running the motor at a preset constant speed is not really competitive when compared with a modern control line stunt IC power train generating modulated power. Therefore, investigations should be made, both technically and commercially, regarding the feasibility of in-flight power control for electric motors. Without such technology becoming generally available in a ready-to-fly form, a breakthrough of electric power in control line stunt will not happen. Paving the way, the rule makers have already done their part, because under

4.2.2 g) in Section 4 Volume F2 of the current 2007 Sporting Code of the FAI, on page 10, the book says: "For power sources other than piston engines, engine power controlling systems, whether pilot operated or automatic, shall be permitted." While there are undoubtedly many ways to control in-flight power of an electric motor, the following is an attempt to lay out the basics of an automatic on-board power governor for use in c/l stunt models. At this point, however, I need to add that I am not qualified to make scientifically correct statements and that the purpose of this article is to encourage contribution from those who are. I look forward to support, as much as I can, their imitative when it comes to find out whether the basic assumptions made below are true and whether the suggested device could be built.

#### **C/L Stunt Basic Numbers and a Statement of Theory**

Control line aerobatic model airplanes must fly a set of very tight manoeuvres within very much restricted airspace and must therefore be equipped with large elevators and flaps. Deflecting the large control surfaces requires considerable force, which, when flying at a typical speed of 26 m/sec (5.2 sec/lap), may reach 4 Kg (9 lb) at full control throw. Consequently, in-flight line tension may never fall below this value. When accepting 4 Kg (9 lb) line tension as being sufficient to allow full throw control, then the level flight low altitude speed (of a 2 Kg / 71 oz. with fuel) model flying on 70 ft lines, must be at least 21 m/sec or 6.4 sec/lap. This results in a sufficiently high line tension of 4 Kg (9 lb). The problem, however, is that once the airplane flies through the top of the hemisphere in knife-edge attitude, the line tension is reduced by the weight of the model. In our particular case the remaining line tension of 2 Kg (4.4 lb) is no longer sufficient to fully control the flight track. This is why we have to fly 5.2 sec level laps, generating a line tension of 6 Kg / 13 lb, to have enough remaining line tension left overhead. It is also the reason why piston engine power trains are tuned to deliver modulated (more on top, less in descent) power while flying on the stunt hemisphere.

I do realize that the stunt experts will consider the above not exactly such hot news. But then just imagine what an airplane, allowing perfectly solid feeling, very slow and super accurate manoeuvring at 6 sec/lap, could do to your square eights. And try to picture how the same airplane gently speeds up in climb, getting just fast enough to really snap those two upper corners of the hourglass manoeuvre. Interested? Well, to get this, the speed range to keep the minimum required line tension all over the place, must reach from 23 m/sec (6 sec/lap) at level flight up to 27 m/sec (5.0 sec/lap) when passing through the top centre. All it takes to do this is a really powerful, fast responding motor and a throttle to be "firewalled" when needed. Not allowed in competition for IC motors, I'm afraid.

With the FAI rule allowing automatic in flight power control for electric motors, speed control is now possible. For the purpose of competition stunt flying, I do believe such control must operate automatic, i.e. without adding workload to the pilot. This would require that flight parameters, such as airspeed, altitude or attitude would be used to govern motor power. For me, the idea of using lateral acceleration, or line tension, to become the governing parameter for a power seems to be attractive and I would really like to find out more about the feasibility of a "g-force driven governor" keeping up an adjustable minimum line tension by modulating the power of the motor. "Fly as slow as possible and as fast as needed"

Target Specifications of a Power Governor Sensing Lateral Acceleration

The hypothetical g-force governor is a device driving a regular power controller for electric flight motors in control line models. After take-off, it starts to sense lateral acceleration and increases power until a predefined g-load is reached and then modulates power up or down to maintain the target acceleration within adjustable brackets. When total run time has elapsed, the governor shuts down the motor and engages a propeller brake for landing in power-off configuration.

- Adjustable total run time 30 - 480 sec (10 sec steps)
- Adjustable max. current

limiter

- Programmable controlling functions (g-force vs. power)
- Propeller breaking after shut down.
- Safety feature preventing unwanted motor start

For details on a g-force sensor check: STMicroelectronics Type LIS3LV02DQ 3-axis g-sensor +/- 6 G (<http://www.st.com/stonline/products/families/sensors/accelerometers.htm>)

#### **Power Requirement, Battery Capacity and Weight**

For it to be used in a modulated power C/L stunt application, an electric motor, turning a narrow blade 14 x 6 prop., would repeatedly have to go through a number of typical flight cycles, each consisting of:

A 12 seconds run at a low level flight RPM of 8,000, followed by a 10 seconds manoeuvre cycle during which peak RPM of 10,000 may be required to keep up speed, and then again followed by another 12 seconds low power level flight phase.

Thirteen of such cycles have to be flown, totalling a run time of approx. 7 minutes.

Total installed weight of the power train including, spinner, propeller and batteries, shall not exceed 800 Grams / 28 oz.

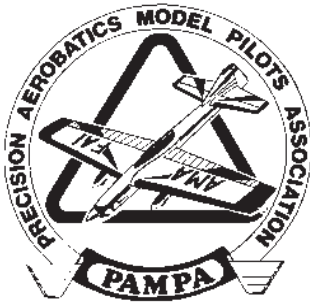
#### **Appeal**

I would like to invite electric flight pros in general and controller designers in particular to study and investigate the feasibility of developing an electric power train of the above described type for the control line stunt community. While the initial market for a competition type C/L governor (all other items being of the shelf standard) is definitely rather limited, the breakthrough of electric power for serious competition control line flying might well trigger the interest of the much larger group of sports flyers. I'll be very happy to discuss further details of a related project with parties and individuals being interested.

-Peter Germann







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**PAMPA**, an AMA approved Special Interest Group, founded July 1973. Objectives include a means of communications among control line stunt flyers, voting on issues affecting control line stunt, and administration of the Control Line Precision Aerobatics Event at the Nationals and conduct of the FAI Team Selection Trials.

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*Stunt News* (ISSN 1076-2604) is the official newsletter of the Precision Aerobatics Model Pilots' Association (PAMPA), a not-for-profit hobby association, and is published bi-monthly at P.O. Box 1955, Sun City, AZ 85372. Annual membership dues are \$35 which includes a subscription to *Stunt News*. Periodical postage rate paid at Merrifield, Virginia.







Warren Tiahrt's Ebejer Venus at VSC 19. Photo by David Russum.



Bob Whitley's Hawker Hunter at VSC 19. Photo by Dave Russum.



Gene Martine's Lark at VSC 19. Photo by Dave Russum.



Ted Fancher's Chizler at VSC 19. Photo by Dave Russum.



Lou Wolgast's Fury at VSC 19. Photo by Dave Russum.



Clair Sieverling and friend at the VSC 19 with a Phoenician. Photo by Tom McClain.





Bob Whitley and Chris McMillin with their OTS entries, Paul Plecan P-38 and F7F Tigercat. Photo by Rickiii Pyatt.



Allen Brickhaus' Adams' Special at VSC 19. Photo by Dave Russum.



A pair of Red Reinhard Galloping Comedians, Mike Donovan and Friend. Photo by Dave Russum.



Jim Thomerson's DMeco Sportwing at VSC 19. Photo by Dave Russum.



Keith Trostle's Big Job at VSC 19. Photo by Dave Russum.



Dale Barry's Humongous at VSC 19. Photo by Dave Russum.





Keville '06





Gordy Delaney and his Gierke All American Eagle at VSC 19. Photo by Rickii Pyatt.



John Miller and his Gierke All American Eagle at VSC 19. Photo by Dave Russum.



Bob Lipscomb's Gierke Novi III at VSC 19. Photo by Dave Russum.



The David Gierke Novi I, III and All American Eagle Fleet. Photo by Tom McClain.



Grady Widener's Gierke Novi I at VSC 19. Photo by Randy Smith.



Dave Gierke's original All American Eagle at the VSC 19. Photo by Randy Smith.



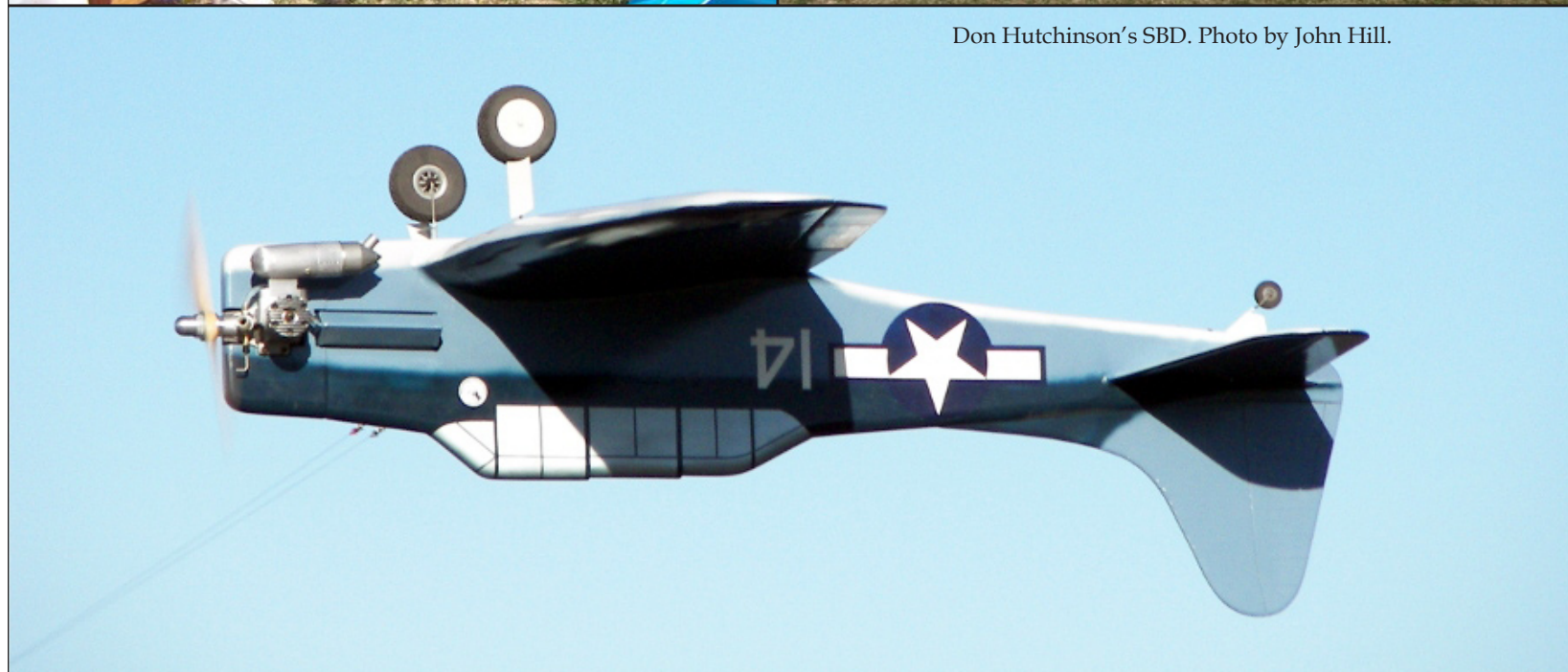
Father and son, Dan and Sean McEntee at VSC 19. Photo by Allen Brickhaus.



The District Five gang at the VSC 19. Photo by Dale Barry.



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District 3 Director Patrick Rowan's Oriental. Photo by Patrick Rowan.



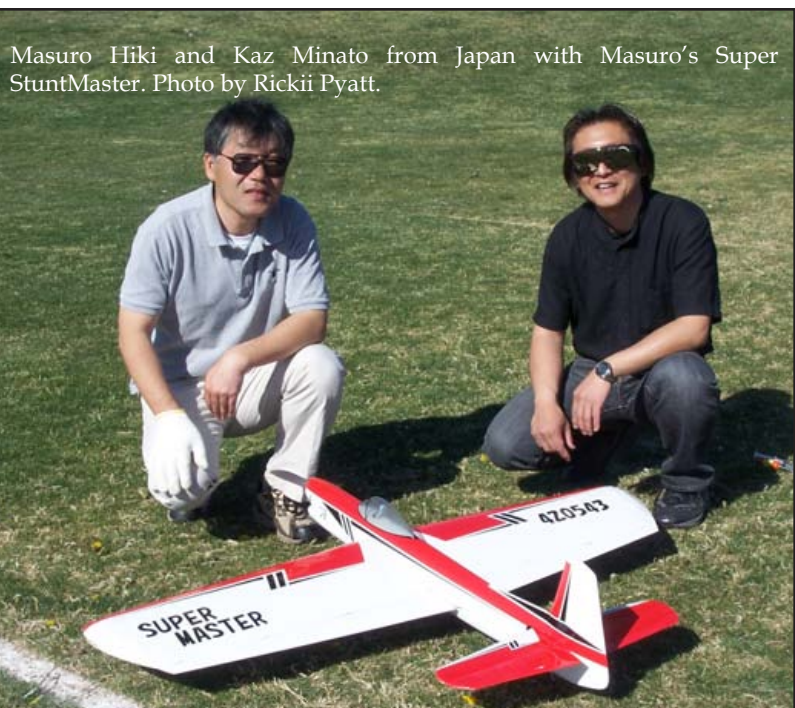
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Masuro Hiki and Kaz Minato from Japan with Masuro's Super StuntMaster. Photo by Rickii Pyatt.



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Italy's Bruno Massara with his outstanding Hawker Hurricane. Photo by Bruno Massara.



Italy's Luigi Massara with his one of kind Boeing P-26A Peashooter. Photo by Bruno Massara.



Australian John Elias' Tucker Special. Photo by Tom McClain.