FLYING LINES

NEWS OF NORTHWEST CONTROL-LINE MODEL AVIATION

1073 Windemere Dr. NW, Salem, OR 97304 Editor: **Mike Hazel**

AUGUST 1996, ISSUE # 133

IN THIS ISSUE: Scale by Fred Cronenwett, Round & Round by John Thompson, Competition point standings, 'B' Speed Record Review, Special Topics by Orin Humphries, Contest Results, World Championship results!, and more good stuff!

NOTES FROM THE EDITOR'S DESK

Greetings, all! With this ending of summer issue, we welcome Fred Cronenwett to the FL staff. Fred is a well known scale modeler, hails from Southern California, and has been a frequent NW Regionals entrant. Welcome aboard the FL ship, Fred!

As I believe was mentioned in the last issue, John Thompson's R & R column came up missing, but not because John did not submit it. It just fell through the cracks somewhere. Although a month late, it is still relevant, and we do have it now this issue. John has some important words regarding the NW Regionals.

Speaking of the Regionals, a new feature we started a couple of years ago, was establishing a category of Regionals records. Since non-NW competitors cannot set NW records, this adds some more interest to the meet, as all entrants are eligible to be included. There were a number of new marks set in 1996, as you will see on that page.

Via USA team member Will Naemura, we have included the complete results of the World Champs just held in Sweden. Congratulations to all the USA and Canada team members for your fine performances.

All for now, see ya next month.

JOHN, YOU RESUBMIT CAN YOUR CLASSIFIED AD.

— M —

Sport Scale - Your first Model

By: Fred Cronenwett

Ever considered entering Sport Scale and wondered what the judges are looking for or how to approach the event? Scale has one purpose in mind, to convince the judges that your model is a duplicate of the full size version in appearance and flight characteristics. There are many levels of Scale, everything from Fun Scale, Sport, Precision and even FAI which is the international level of competition. Today we will be looking at Sport Scale. Unlike other CL events the large majority of the Control Line Sport Scale models being flown today were intended for Radio Control. In the past there were a large number of CL Scale kits available, but no more. There are many kits are on the market today that were designed for Radio Control that are perfect for CL scale. The realm of Radio Control is where we will find everything for our CL scale model except the Bellcrank and leadouts.

Before you run down to your nearest Hobby shop to pick up that RC Scale kit we need to stop and research your subject aircraft first. Let's look at the North American P-51 Mustang as an example. What is the first question you should ask yourself if I tell you I have a scale kit of a P-51? **Which version!** The P-51 changed configuration at least 5 times, so you have to be able to document the version you build. When the model is judged for static points you provide the judges with 8 pages of information which include the following: 3-view, photographs or similar information about the color and markings and some other general information. One of the best sources for this information is the "IN ACTION" series from Squadron Signals. This series of books are affordable and include everything you will need for a sport scale model.

Once you have selected your favorite airplane you would like to build start looking thru magazines and your local hobby shop for a kit. Let's say you have selected the P-51D Mustang. You have lots of choices here to choose from including Royal, Top Flite, Brian Taylor (thru Bob Holman), Innovative, House of Balsa, and the list goes on..... Within these choices the size and complexity will vary greatly. Anything powered with an .40 to .60 sized engine is probably the ideal size for CL Scale. Models with wing spans from 50" to 65" are easy to handle, and are not sensitive to wind and are able to carry the extra weight of the control systems and possibly even retracts. Smaller models don't fly as well and the larger models are difficult to transport and retracts for the large models tend to get expensive.

The name of the game in Scale is OPTIONS. Your total possible score in Sport Scale of 200 points consists of 100 static points and 100 flight points. There are only 4 mandatory flight maneuvers, Takeoff, 10 level laps, Landing and Realism. You choose the 6 remaining options which may include Touch and Go, Throttle control, Wingover, Retracts, Taxi, Flaps and others. Models without Throttle control suffer in the realism points. Throttle control is one of those features that is almost required to do well. The P-51D Mustang is loaded with options, Retracts, Throttle, Flaps and sliding canopy. A basic model would only have Throttle, while a complex one would have all of the above.

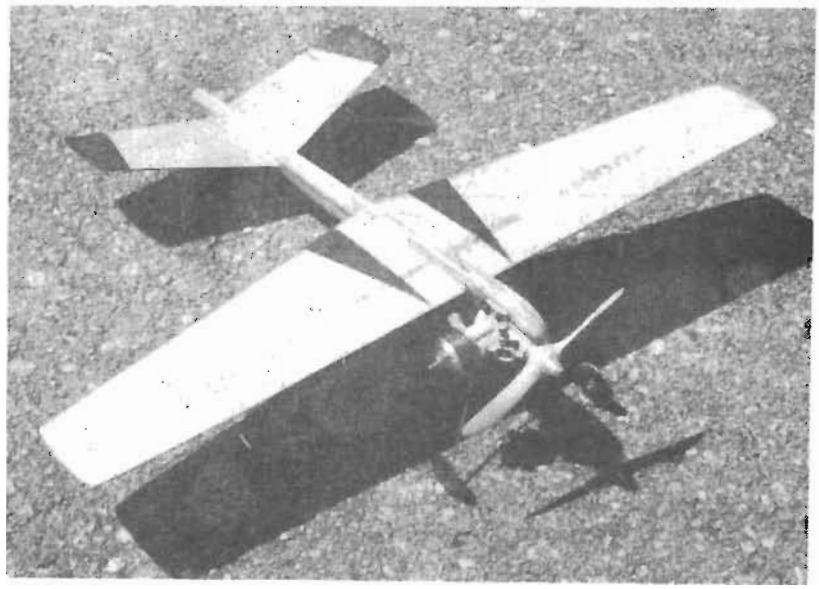
Select a good RC engine with a reliable idle and determine if you want to install other features. Retracts are by far the hardest with flaps being the simplest. Make sure you choose a kit with good outlines since 40 points of your static score is how well you model matches the full size outlines. Lay out all of the required hardware and documentation. I will cover documentation in more detail later but bottom line is that your model must match the photographs you provide the Scale judge. Remember this, If you can see a feature in the photograph, it needs to be on the model. If the full size P-51 has a N-number, then your model will have the same N-number. Don't change the N-number to match your AMA number. Every number and marking must be identical to the full size version. Also pay attention to any changes that may have been made to the full size version such as modern navigation equipment or other aerodynamic changes. Some of the P-51's that race at Reno have been extensively modified, which include clipped wings or elevators.

By now you have pictured your model with 5 or 7 lines and may or may not be thrilled with this idea. Again Radio Control has provided us with a means for our CL model to control all of our features with electronics and two flying lines. Send 5 first class stamps to me in trade for two articles on how to use electronic controls. Single channel is the best choice for the model with throttle only, while Multi-channel is the best choice for the model with throttle, retracts and flaps.

Next Issue: Documentation - Having fun researching you favorite airplane

Send 5 first Class stamps in trade for articles on CL electronics:

Fred Cronenwett
7352 Independence #201
Canoga Park, CA 91303
(818) 719-0167

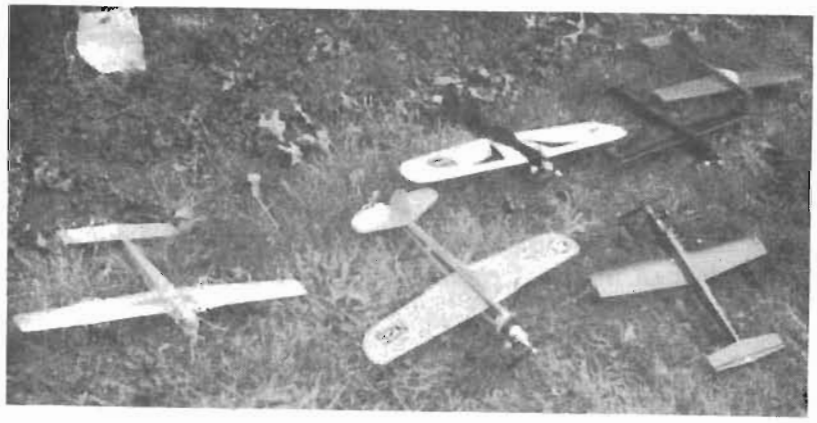


Ye Olde Editor's 1/2 A Profile Proto speed ship. Lightweight design is named "Hogfeather". Construction is of balsa, spruce, and carbon fiber. Motivation is by Stels .049, with own fiberglass prop.

(Mike Hazel photo)

The Mouse Race entry seen at the Portland April contest. Groups were from Hoquiam, Roseburg, and Madras. Adult mentors in the photo include: Dave Shrum, Alan Olsen, and Larry Hyder.

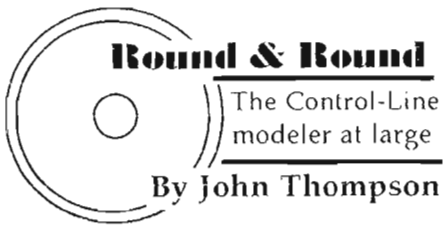
(Gary Harris photo)



Part of the racing fleet from the Roseburg contingent.

Mouse is now the most popular racing event in the Northwest.

(Gary Harris photo)



Modeling thought for the month:

"If a situation requires undivided attention, it will occur simultaneously with a compelling distraction."

— Hutchinson's Law

Passing of the torch

IT WAS the same old Regionals we know and love, and it was an all-new contest that dazzled us all.

A new city, a new site, lots of new facilities and an amazing number of new and enthusiastic workers. A new high in number of entries and a new milestone — 25 years — for the West's greatest contest.

The 1996 Northwest Control-Line Regionals, born of uncertainty when the traditional Regionals site became "iffy," moved to Roseburg, Oregon. The Umpqua Valley Modelers of Roseburg joined with the Eugene Prop Spinners in finding and preparing a new site at the Roseburg Regional Airport. There were some first-year bugs to be worked out, but on the whole it was a resounding success.

That big hangar for registration, vendors and other contest business was a great addition, provided by an airport business operator.

The Umpqua Valley club's RC members pitched in and worked as officials and general contest workers throughout the weekend, and all of us lead officials had more help then we've ever had before — and promises of the same next year.

Regionals result will appear elsewhere. Having been chained to the combat site most of the weekend, my own observations were somewhat limited, but a few impressions stood out:

• **The youth movement:** Those 14 kids in junior mouse race is no fluke. The kids are coming and the torch is passing, not just from one club/contest site to another, but from one generation to the next.

• **Ups and downs:** There always are ups and downs in attendance. Racing was up — 20 senior/open Mouse I racers! — stunt was up. Combat was strong, scale was strong. Speed and carrier were down a bit. Such a cycle is standard, and I predict an even higher entry next year in all events, especially after word gets out about this year. Watch *Model Builder* for Fred Cronenwett's special article on the 25th Regionals.

• **Bully banquet:** The attendance of AMA President Dave Brown at the contest, and as featured speaker at the banquet, was a fitting tribute to the contest's 25 years. Dave's excellent presentation was a very welcome honor from AMA for our premier western event. Also, good food, a lovely banquet facility, interesting historical slides, and other features. If you missed it, make sure to sign up for next year's banquet.

• **The welcome mat:** Never has a model contest been more welcomed by a community. The city of Roseburg, the airport officials, local businesses, motels and the news media bent over backwards to make CL fliers feel wanted. The UVM has an excellent home base for future activities.

A personal note:

This year was my 20th consecutive Regionals. I began attending in 1977 as a competitor, moved to Eugene later that year and began working as an official the following year. Competition at the Regionals became impractical about 10 years ago due to the workload, and I have been purely an official since then (with a couple of minor exceptions).

After several consecutive years as the combat director, I've reached the conclusion that it's time to once again do some torch-passing. As most of the fliers know, I am not by nature a combat official and have done it for all of these years simply to assure that combat would be a continuing feature of the contest. I've been the combat director because nobody else was available.

As combat activity has rebounded in the past few years, it now would appear that the Northwest has a good supply of active or potential combat officials.

Therefore, I'm stepping down as the Regionals combat director, and will look for other avenues through which to contribute to the Regionals' success beginning in 1997. My future involvement with combat will be purely as a competitor.

I'll continue to oversee the acquisition of materials and equipment, and preparation of the

Regionals site. The Umpqua Valley Modelers has indicated that they will continue to provide judges.

However, because there are to my knowledge no other qualified combat lead officials in the Eugene or Roseburg clubs it will be up to Northwest combat fliers to consider the issue of the overall combat director for 1997.

I suggest a rotating directorship among several fliers; if each qualified official would take one year off flying in rotation, nobody would have to give up flying more than once every several years. A second alternative would be a split directorship, in which three or four fliers volunteer to take on one event each, so that they could fly in the others.

If you've not been a combat director before, the requirements are fairly simple: You need a good working knowledge of the rulebook, quite a bit of flying experience so that you know the standard procedures and recognize many of the odd situations that come up, and, most of all, a thick enough skin to withstand a more or less constant questioning of your judgment.

It's never too soon to begin making plans for such a major undertaking, and I encourage Northwest combat fliers to start thinking about the '97 Regionals now. Anyone interested in serving as the 1997 combat director, or taking on one or more event, can contact me and I'll make sure you are plugged in to the process of event director selection.

Finally, I'd like to thank all the fliers who have attended and helped build up the Regionals in combat for the past 10 years. We're on a strong positive cycle now and I'd like to see it continue. Maybe some year in the distant future I'll fly in the contest again myself!

NORTHWEST CL CONTEST CALENDAR

THE FOLLOWING LISTING IS A SUMMARY OF ALL KNOWN A.M.A. AND M.A.A.C. SANCTIONED EVENTS AS OF 7-10-96. FOR FURTHER INFORMATION, PLEASE CONTACT THE INDIVIDUAL LISTED. CONTEST DIRECTORS AND CLUB LEADERS ARE ENCOURAGED TO CONTACT FLYING LINES AS SOON AS POSSIBLE WITH THEIR PLANS, INCLUDING REVISIONS AND TENTATIVE DETAILS.

SEPTEMBER 14 & 15: KENT, WASHINGTON 1996 RAIDER ROUNDUP
EVENTS: RACING, CARRIER, PRECISION AEROBATICS, SPEED, COMBAT, SCALE, MORE DETAILS TO BE ANNOUNCED. -?? When??????????? SITE: BOEING SPACE CENTER SPONSOR: SEATTLE SKYRAIDERS CONTACT: JOE DILL, 22533 152ND AVE SE, KENT, WA 98042 PHONE: (206) 631-2367

SEPTEMBER 29: COQUITLAM, B.C. EVENTS: NW FLYING CLOWN RACE, MOUSE RACE I. SITE: UPPER COQUITLAM RIVER PARK. SPONSOR: PACIFIC AEROMODELLERS CLUB. CONTACT: CHRIS COX, 604-596-7635

OCTOBER 5 & 6: RICHLAND, WASHINGTON DESERT CARRIER BASH
EVENTS: PROFILE CARRIER, .15 CARRIER, CLASS I & II CARRIER COMBINED, FLYING CLOWN RACE, CLASS I MOUSE RACE, NW SPORT RACE, NW SUPER SPORT RACE, OLD TIME STUNT. SITE: HORN RAPIDS ATHLETIC COMPLEX. SPONSOR: COLUMBIA BASIN BALSA BASHERS CONTACT: PAUL RICE (509) 627-3152

OCTOBER 12 & 13: PORTLAND, OREGON REALLY RACING & FALL FOLLIES
EVENTS: MOUSE RACE CLASS I (INCLUDES SEPARATE JR CLASS), MOUSE RACE CLASS II, AMA GOODYEAR, SLOW RAT RACE, RAT RACE, NW SPORT RACE, NW SUPER SPORT RACE, FLYING CLOWN RACE, PRECISION AEROBATICS IN FOUR PAMPA CLASSES. SITE: DELTA PARK SPONSOR: EUGENE PROPSPINNERS & NORTHWEST FIREBALLS. CONTACT: JOHN THOMPSON (541) 689-5553

The Scoreboard

Northwest control-line competition standings.

The Northwest Regionals and several other contests in June kept the standings in constant flux during the early summer. As a result, this month we have almost a complete update.

Flying Lines keeps track of standings in all AMA rulebook and Northwest official events, in all Northwest sanctioned contests.

Your *FL* editors do their best to keep up on the results, but contest directors can help keep the standings up to date by making sure to send the results to *FL* immediately after the contest. When you send your report to AMA, remember to send the results to *FL*, too.

Results must include the placing in each event through fourth place and the report also must list the number of contestants in the event, in order for the point standings to be counted accurately.

Also, please include in your report the hometown of the contestants. Only Northwest residents are counted in the standings (AMA Dist. XI and British Columbia). The score of each contestant also should be listed for general reporting purposes and for checking against the Northwest records, another popular *FL* feature.

Send results to statistician John Thompson at 2456 Quince St., Eugene, OR 97404. *Note that this is a new address!*. Results also can be sent via e-mail to JohnT4051@aol.com.

Remember, only results that we receive can be counted, so send them in. If you flew in a contest t that doesn't appear to be counted, contact the contest director or *FL* and let us know. Also let us know if you spot any apparent errors in the standings.

One change in the procedures from the last update: There will no longer be an *overall aerobatics* category. The *precision aerobatics* category combines the four PAMPA classes (with experts scored on a 1.5 factor). Separate categories are kept for *old-time stunt* and *classic stunt*, but those will not be combined into an overall category with the PAMPA classes.

Contests counted to date: March 16, Richland, Wash. March 24, Coquitlam, B.C. April 14, Richmond, B.C. April 20, Portland, Ore. April 28, Richmond, B.C. May 4-5, Richland, Wash. May 24-26, Roseburg, Ore. June 15, Richmond, B.C., June 22-23, Kent, Wash. June 29-30, Snohomish, Wash.

Following are the standings for updated events (top fives for individual events, top tens for overall standings):

1996 STANDINGS

AMA COMBAT (2 contests, 41 entries)

1. Howard Rush	11
2. Norm McFadden	10
3. Jeff Rein	9
4. Ken Burdick	8

SLOW COMBAT (1 contest, 2 entries)

1. Jeff Rein	2
2. Gary Harris	1

1/2-A COMBAT (1 contest, 7 entries)

1. Mel Lyne	7
2. Dick Salter	6
3. Jeff Rein	5
4. Tom Strom	4

80-MPH COMBAT (1 contest, 12 entries)

1. Dick Salter	12
2. Gary Harris	11
3. Tom Strom	10
4. Mel Lyne	5
Ken Burdick	5

OVERALL COMBAT (5 contests, 62 entries)

1. Dick Salter	18
2. Jeff Rein	16
3. Tom Strom	14
4. Ken Burdick	13
5. Mel Lyne	12
Gary Harris	12
7. Howard Rush	11
8. Norm McFadden	10

CLASS I CARRIER (2 contests, 8 entries)

1. Euan Edmonds	6
2. Terry Miller	4
3. Mike Hazel	1

PROFILE CARRIER (3 contests, 12 entries)

1. Todd Ryan	9

2. Euan Edmonds	7
3. John Thompson	2
4. Mike Potter	1
Mike Hazel	1

.15 NAVY CARRIER (3 contests, 13 entries)

1. Lloyd Marohl	9
Todd Ryan	9
Alan Olsen	9
4. Frank Boden	4
5. Euan Edmonds	2

OVERALL CARRIER (9 contests, 36 entries)

1. Todd Ryan	18
2. Euan Edmonds	15
3. Alan Olsen	9
Lloyd Marohl	9
5. Terry Miller	4
Frank Boden	4
6. Mike Hazel	2
John Thompson	2
8. Mike Potter	1
Jay Just	1
Rich McConnell	1

PRECISION AEROBATICS (10 cont., 57 entries)

1. Paul Walker	27
2. Bob Emmett	9
Chris Cox	9
4. Mike Conner	8
5. Jack Pitcher	7.5
6. Randy Powell	7
7. Jerry Eichten	5
Thorin Brown	5
9. Karl Brown	4
10. Dave Finnie	3
Dave Royer	3

OLD-TIME STUNT (4 contests, 30 entries)

1. Greg Davis	9
2. Mel Lyne	8
Chris Cox	8
4. Emil Kovak	7
Rick Meadows	7

CLASSIC STUNT (2 contests, 15 entries)

1. Don McClave	14
2. Dan Rutherford	5
3. Rich McConnell	4

MOUSE RACE CLASS I (7 contests, 57 entries)

1. Todd Ryan	28
2. Joe Rice	21
3. Euan Edmonds	14
Stephen Cox	14
5. James Cox	13

MOUSE RACE CLASS II (1 contests, 7 entries)

1. Stephen Cox	7

AMA GOODYEAR (1 contests, 2 entries)

1. Joe Rice	2

NORTHWEST GOODYEAR (1 contests, 3 entries)

1. Joe Rice	2
2. Mark Wahlster	1

CLOWN RACE (9 contests, 49 entries)

1. Todd Ryan	45
2. Joe Rice	22
3. Stephen Cox	18
Aaron Olsen	18
5. Mac Ryan	17

NW SPORT RACE (4 contests, 18 entries)

1. Henry Hajdik	11
2. Todd Ryan	9
3. Nitroholics Racing Team	6
4. Mel Lyne	5
5. Ron Salo	4

NW SUPER SPORT RACE (2 contests, 9 entries)

1. Todd Ryan	8
2. James Mills	3
3. Alan Olsen	2
4. Jesse Gooby	1

OVERALL RACING (28 contests, 157 entries)

1. Todd Ryan	90
2. Stephen Cox	39
3. Joe Rice	35
4. Aaron Olsen	22
Mac Ryan	22
6. Mike Conner	21
7. James Cox	20
8. Nitroholics Racing Team	18
9. Rick Meadows	17
10. Euan Edmonds	15

SCALE (combined) (3 contests, 11 entries)

1. Pat Johnston	2

SPEED (combined) (12 contests, 56 entries)

1. Chuck Schuette	30
2. Bob Spahr	28
3. Dick Salter	10
4. Chris Sackett	6
Todd Ryan	6

Jerry Thomas	6
7. Euan Edmonds	5
8. Mike Hazel	3
Bob Einhaus	3
10. Julie Rice	2
Ron Salo	2

TOP JUNIORS (Scores posted in 6 contests)

1. Euan Edmonds	31
2. Stephen Cox	30
3. James Cox	20
4. Tiffany Mosley	12
5. Derrick Meadows	6
6. Scott Davis	5
Nathan St. John	5
8. Shawn Tilma	4
Dawndee Brittain	4
10. Travis organ	3

Send contest results, corrections and other correspondence regarding Northwest Competition Standings to John Thompson, 2456 Quince St., Eugene, OR 97404, e-mail JohnT4051@aol.com. For a printed copy of complete standings for any event, send a self-addressed, stamped envelope.

Winners at the Bladder Grabber XIX combat contest.
(L to R, 1st to 4th) Rich Lopez, Mark Rudner, Phil Granderson, Sam Bridger.

(Frank Boden photo)

The Flying Flea Market

Classified advertisements — FREE for FL subscribers

FOR SALE: NEW REWORKED VA .049 MOTORS. ALL MACHINED SURFACES HAND LAPPED, FIT, BLUEPRINTED AND MY NEW BULLET PROOF (BP) CONNECTING ROD INSTALLED IN EACH MOTOR. NO BREAK IN REQUIRED, READY TO RUN. 30,000+ RPM OUT OF BOX. $75. REWORK YOUR OLD VA $25 LABOR PLUS PARTS. 7075T6 ALUMINUM BP CON ROD $10. JEFFREY REIN, 14326 102ND AVE NE, BOTHELL, WA 98011, PHONE (206) 823-6053

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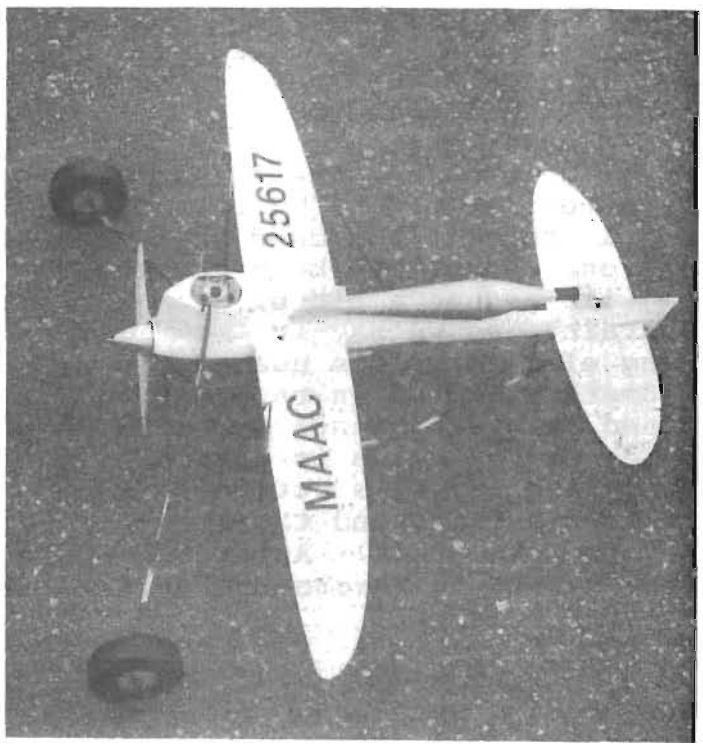
FOR SALE: MANY BACK ISSUES O F FLYING LINES ARE AVAILABLE. AN ORDER SHEET IS AVAILABLE UPON REQUEST, LISTING ISSUE NUMBERS AND DATES AVAILABLE FROM THE FL ARCHIVES.

FOR SALE: SEVERAL GLOW ENGINES THAT HAVE BEEN CONVERTED TO IGNITION: FOX .15, McCOY REDHEAD .19, K&B GREENHEAD, ETC. ALL IN GOOD SHAPE, COMPLETE WITH TIMERS, BUT NO PLUGS. CONTACT: HOMER SMITH, 1417 NW 191ST STREET, SEATTLE, WASH. 98177.

WANTED: COLLECTABLE QUALITY SPEED PLANE KITS. MIKE HAZEL (503) 364-8593



RECORD REVIEW

Ron Salo set the Northwest 'B' Speed record during the 1995 Nationals held in Richland, Washington. This record stands at 158.53 mph.

Ron's original design follows nice looking traditional curves, with elliptical surfaces. Here are the details: a Harter's 'B' pan was used, and the rest of the construction is primarily basswood and balsa. Glass cloth is used overall, and a white K&B epoxy finish. The wing spans 27 inches, with 75 square inches of area. The tail is 13 inches, with 43 inches of area. Fuselage length is 20 inches. This is not a small plane, but it tips the scales at a modest 24 ounces.

Monoline controls were used, of course, with an H&R style torque unit. The 27cc capacity fuel tank was homebuilt, and is of the suction uniflow variety.

In the motivation department is a Super Tigre X29. Ron reworked the engine hisself, and it features an O.S. drum valve assembly intake. The exhaust timing is set at 189 degrees duration, with the boost and fuel transfer ports left stock. The tuned exhaust pipe is an OPS unit, 11 inches long.

Fuel used is, of course, the standard 10% nitro blend required. A McCoy glow plug was used, as was a 7 x 6 prop.

Ron does his own piloting, as these piped suction set-ups are pretty much pre-set before starting.

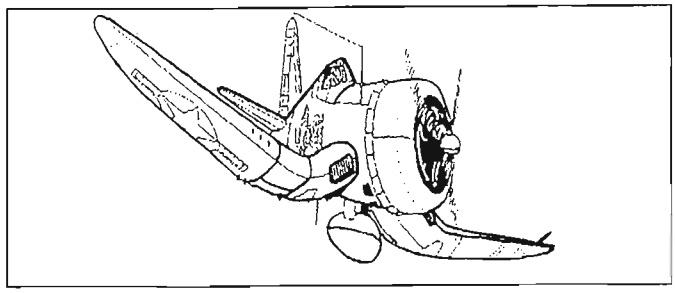
Class 'B' appears to be a challenging event, but Ron appears to have fun doing it. His goal now is to crack the 160 mph mark.

SPECIAL TOPICS

I-BEAMS

by Orin Humphries

Structures Part 3



What do we know so far? A structure is strong only so long as it holds its shape. A structural member that will see compressive loads must have three times the cross sectional area it would need if it saw the same load as a tension or it will buckle. This time we deal with my favorite structural subject, I-beams. There are so many nuggets here to be exploited by the thinking modeler.

The first thing we need to deal with is the simple concept of the tension-compression pair, t-c pair for short. An I-beam has three parts: an upper cap, a shear web, and a lower cap. The caps are referred to by several other names elsewhere, but cap will do for us, here. Lets think about one that is running horizontally and sitting upright like an "I". It is easy to see from common experience that the longer an I-beam gets, holding the other dimensions constant, the more like a hose it becomes. That is, it bends more easily. We also know that the taller it gets (the farther apart the two caps are), the stiffer it will be for the same length. Finally, if the length and height stay the same, but we make the caps and web thicker, the stiffer it will get. The question is, what is the most efficient change we can make in order to improve our small aircraft? But I get ahead of myself.

The loads an I-beam can resist come in many varieties. I-beams are excellent for bending loads if they aren't too long. They are better yet for tension loads and quite good at compression loads. Shear loads (like a paper cutter) can be handled if you give the beam enough web thickness. The torsional loads, though, are perhaps not their strong suit.

We deal, now, with bending loads as this is the case when we use them for wing spars. If you hold one end of the beam and put a bending load on the other the beam will assume a bit of a curved shape, it will deflect, or "strain", as we say in engineering. "Strain" means something else in common usage, but for technical things it is how far something moves in response to a load. The caps in a loaded, strained beam experience opposite kinds of loads. The cap on the outside of the curve is getting stretched, and the one on the inside of the curve is getting squeezed. The outer one, then, is under tension, and the inner one is in compression. Hence, they form a t-c pair. Apply the load in the opposite direction and the curvature reverses itself. So do the loads in the caps.

I recall reading the words of a B-24 pilot in WW II commenting about the wingtips "actually bending up a full foot while climbing out with a full load of gas and bombs." Boy, were those the days before aeroelasticity in jetliner wings or what?

The nugget for I-beams lies in the fact that the stiffness depends wildly upon the distance between the upper and lower caps. I mean, if you keep the caps the same dimensions (and the web the same thickness) but increase their separation with a taller web, the stiffness goes to the Moon! This is the greatest and most important thing I will say in this series.

I do not chose the word, "wildly", for naught. Just watch this. If you increase the radius of a circle, how much will its circumference increase? Say we double the radius. The circumference will double, since it depends upon the "first power of the radius". That is, it's not the radius cubed, or some such. How much will the area of a circle increase if we increase the radius? If we double the radius, the area will be four times as much. The area depends upon the square of the radius. Pi-r-squared, remember? Radius gets doubled, then square that, and you have four times the area. That's quite a bit. You aint seen nothin'. How much will the stiffness of an I-beam increase if we increase the separation of the caps? Hold onto your hats, pilots! The stiffness of and I-beam increases with the fourth power of the separation!!!! That's the square OF THE SQUARE! In plain talk, double the separation. Square that. Now, square what you just got! To illustrate, if we double the separation, well, that's a factor of two squared, or, two times two, which is four. But, you have to square this, now. Four squared is sixteen. This is no malarkey: double the separation of the caps on an I-beam and it will be sixteen times stiffer for a <u>minor</u> increase in weight. If that isn't efficient, I'm Sister Theresa.

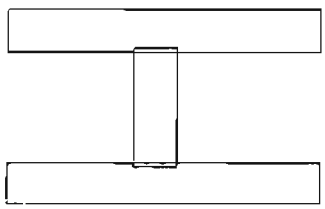


Fig. A

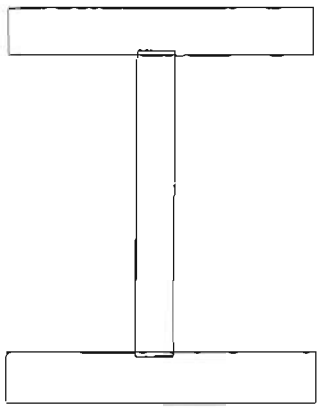


Fig. B

The two I-beams above are intended to be drawn with all things equal except for double the cap separation. The beam in fig. B is 16 times as stiff as Fig. A.

And we'll have even more fun lightening up our structures next time.

CONTEST RESULTS

RICHMOND,B.C., JUNE 15, 1996

FLYING CLOWN-JR (3 ENTRIES)

1)	STEPHEN COX	227
2)	DERRICK MEADOWS	227
3)	JAMES COX	189

FLYING CLOWN-OPEN (3 ENTRIES)

1)	RICH MEADOWS	266
2)	MIKE CONNER	239
3)	FRANK BODEN	188

15 SPORT RACE (4 ENTRIES)

1)	RICH MEADOWS	7:29
2)	HENRY HAJDIK	8:65
3)	MIKE CONNER	9:18
4)	FRANK BODEN	14:49

KENT, WASHINGTON, JUNE 22 & 23, 1996

(NOTE: INCOMPLETE RESULTS PROVIDED)

CLASSIC STUNT (6 ENTRIES)

1)	DON McCLAVE	490.5
2)	DAN RUTHERFORD	425.5
3)	RICH McCONNELL	?
4)	?	

OLD TIME STUNT (8 ENTRIES)

1)	CHRIS COX	298
2)	EMIL KOVAC	275.5
3)	ROY DeCAMARA	213
4)	?	

AMA R/R SPEED (7 ENTRIES)

1)	CHUCK SCHUETTE	89.3%
2)	DICK SALTER	88.1
3)	BOB EINHAUS	87.9
4)	MIKE HAZEL	85.0

NW R/R SPEED (4 ENTRIES)

1)	CHUCK SCHUETTE	92.5%
2)	BOB SPAHR	92.4

PREC.AERO-BEG (3 ENTRIES)

1)	THORIN BROWN
2)	CORINNE BRAMA
3)	ROY DeCAMARA

PREC AERO-INT (3 ENTRIES)

1)	DAVE FINNIE
2)	JOHN BRAMA
3)	EMIL KOVAC

PREC AERO-ADV (4 ENTRIES)

1)	KARL BROWN	439
2)	DAVE ROYER	417.5
3)	MIKE CONNER	?
4)	RICH McCONNELL	?

PREC AERO-EXP (8 ENTRIES)

1)	PAUL WALKER	555
2)	DAVID FITZGERALD	545
3)	CHRIS COX	497.5
4)	JACK PITCHER	488.5

COQUITLAM,B.C., JULY 20 & 21, 1996

NW RECORD RATIO SPEED (4 ENTRIES)

1)	RON SALO (B)	99.3
2)	JERRY THOMAS (JET)	93.3
3)	DICK SALTER (JET)	86.5
4)	MIKE HAZEL (1/2 A PRO)	84.1

JR ONLY "MOUSE RACER 1/2 A PROTO" (4 ENT)

1)	STEPHEN COX	61.83
2)	JAMES COX	60.38
3)	DERRICK MEADOWS	55.30
4)	CHRIS HAZEL	54.93

****

SUBSCRIPTION EXPIRATION DEPARTMENT

THIS IS THE LAST ISSUE FOR THE FOLLOWING SUBSCRIBERS: **JEFF CLEAVER, LARRY HYDER, KELLY ODOM, BARRY THOMSON.**

PLEASE RENEW PROMPTLY TO ENSURE CONTINUOUS SERVICE.

F2A

Speed Models

Results

Date
1996-07-27

Pos	No	Name		Nat	Flight 1	Flight 2	Flight 3	Results
1	048	Parramón Sarrate Luis		ESP	0,0	304,0	311,2	311,2
2	032	Kostin Sergei		RUS	0,0	305,3	0,0	305,3
3	034	Fedotov Konstantin		RUS	303,0	298,3	0,0	303,0
4	011	Billon Gerard		FRA	298,0	297,5	300,6	300,6
5	010	Valo Jari		FIN	300,6	297,6	279,9	300,6
6	039	Halman Peter		GBR	299,3	298,1	295,0	299,3
7	040	Isles Gordon		GBR	295,6	298,7	296,2	298,7
8	042	Naemura William	●	USA	0,0	288,2	298,3	298,3
9	023	Zanin Stefano		ITA	0,0	296,2	297,6	297,6
10	021	Tomelleri Sergio		ITA	293,8	295,8	282,4	295,8
11	029	Rachwal Tomasz		POL	295,5	291,8	283,9	295,5
12	014	Billon Eddy	Jun	FRA	288,9	292,3	295,0	295,0
13	013	Magne Jean		FRA	0,0	0,0	293,8	293,8
14	027	Bell Bill		NZL	293,1	277,1	270,0	293,1
15	005	Mei Luiz Eduardo		BRA	263,8	279,6	292,3	292,3
16	006	Peters Ron	●	CAN	0,0	291,6	0,0	291,6
17	017	Forkert Ulrich		GER	291,2	0,0	0,0	291,2
18	007	Sackett Chris	●	CAN	274,8	291,1	290,2	291,1
19	044	Hughes William	●	USA	289,7	290,7	279,9	290,7
20	051	Osovik Alexandr		UKR	290,5	287,7	289,1	290,5
21	009	Lyhne-Hansen Niels		DEN	279,6	290,2	0,0	290,2
22	043	Brown Thomas	●	USA	289,0	289,2	0,0	289,2
23	030	Miszczyk Adam		POL	281,3	289,1	0,0	289,1
24	041	Morrissey Ken		GBR	288,5	287,1	0,0	288,5
25	012	Aube Jean-Marc		FRA	0,0	280,4	288,4	288,4
26	045	Fogg Bobby	● Jun	USA	0,0	280,7	287,8	287,8
27	022	Zanin Elio		ITA	285,9	284,5	287,1	287,1
28	036	Stiämesund Per		SWE	282,4	281,6	286,6	286,6
29	001	Disters Maris		AUS	284,6	277,3	277,5	284,6
30	026	Metkemeijer Rob		NED	283,5	276,7	279,0	283,5
31	031	Sieida Lukasz	Jun	POL	0,0	283,3	0,0	283,3
32	033	Struchkov Oleg		RUS	0,0	0,0	283,3	283,3
33	003	Marksteiner Franz		AUT	0,0	283,2	283,0	283,2
34	018	Szegedi László		HUN	282,3	278,8	283,0	283,0
35	025	Rietbergen Paul		NED	267,0	279,6	271,3	279,6
36	019	Elekes Imre		HUN	0,0	275,0	278,6	278,6
37	024	Nakayama Akira		JPN	265,6	277,0	278,4	278,4
38	015	Kiel Udo		GER	0,0	277,8	0,0	277,8
39	004	Merlin Marc		BEL	0,0	0,0	277,3	277,3
40	016	Gründel Peter		GER	0,0	277,1	0,0	277,1
41	002	Kofler Helmut		AUT	0,0	274,7	0,0	274,7
42	037	Fällgren Göran		SWE	264,3	270,4	0,0	270,4
43	020	Vince Viktor		HUN	0,0	257,7	0,0	257,7
44	038	Kiellberg Ove		SWE	0,0	245,4	0,0	245,4
45	028	Rachwal Andrzej		POL	239,8	236,6	0,0	239,8
46	046	Tomek Vladimir	Jun	CZE	0,0	219,5	0,0	219,5

F2A

Speed Models

Results

Date
1996-07-27

Pos	No	Name		Nat	Flight 1	Flight 2	Flight 3	Results
47	047	Sigitas Snukiskis		LIT	0,0	0,0	0,0	0,0
48	008	Jørgensen Carsten		DEN	0,0	0,0	0,0	0,0
49	049	Benavent Balaguer Jor		ESP	0,0	0,0	0,0	0,0
50	050	Troino Pavel		UKR	0,0	0,0	0,0	0,0
51	052	Jurkovic Marián		SVK	0,0	0,0	0,0	0,0
52	035	Taran Sergei	Jun	RUS	0,0	0,0	0,0	0,0
53	053	Bubenik Tomás	Jun	SVK	0,0	0,0	0,0	0,0

F2A

Speed Models

Junior, Results

Pos	No	Name		Nat	Flight 1	Flight 2	Flight 3	Result
1	014	Billon Eddy		FRA	288,9	292,3	295	295
2	045	Fogg Bobby	●	USA	0	280,7	287,8	287,8
3	031	Siejda Lukasz		POL	0	283,3	0	283,3
4	046	Tomek Vladimir		CZE	0	219,5	0	219,5
5	053	Bubenik Tomas		SVK	0	0	0	0
6	035	Taran Sergei		RUS	0	0	0	0

F2B

Aerobatic Models

Final Results

Pos	No	Name		Nat	Flight 1	Flight 2	Final 1	Final 2	Final 3	Result
1	117	Han Xinping	W/	CHN	3 264,5	3 220,5	3 048,0	3 148,5	3 069,0	6 217,5
2	174	Walker Paul		USA	3 128,0	3 154,5	3 102,5	3 070,0	3 063,5	6 172,5
3	175	Fitzgerald David		USA	3 077,5	3 126,5	3 077,0	3 072,0	3 023,0	6 149,0
4	119	Wang Hongwei		CHN	3 194,5	3 216,0	3 105,5	2 974,0	3 041,5	6 147,0
5	147	Yokoyama Mitsuru		JPN	2 991,0	2 999,5	3 028,5	2 966,0	3 012,5	6 041,0
6	186	Kolesnikov Anatoly		UZB	3 033,5	2 968,0	2 978,0	3 019,0	3 009,0	6 028,0
7	176	Werwage William		USA	3 098,5	2 956,5	3 018,0	3 002,0	2 991,0	6 020,0
8	129	Beringer Gilbert		FRA	2 995,0	3 010,5	2 992,5	3 002,5	2 927,0	5 995,0
9	108	Rodrigues Bene		BRA	2 928,5	3 043,0	2 875,0	2 962,5	3 007,5	5 970,0
10	146	Yoshimura Sadahiko		JPN	2 937,5	3 056,0	2 980,0	2 973,0	2 970,5	5 953,0
11	159	Strakhov Vladimir		RUS	3 054,0	2 963,0	2 978,5	2 911,0	2 949,5	5 928,0
12	118	Niu Anlin		CHN	3 203,5	3 215,0	2 766,5	3 068,5	2 852,5	5 921,0
13	128	Billon Gerard		FRA	2 843,0	3 036,5	2 911,0	2 941,5	2 972,5	5 914,0
14	130	Delabarde Serge		FRA	3 052,0	3 035,0	2 926,5	2 805,5	2 960,5	5 887,0
15	143	Compostella Luciano		ITA	2 911,5	3 033,5	2 387,5	2 931,5	2 900,5	5 832,0
16	177	Barry Derek	Jun	USA	2 891,5	3 012,5	2 837,0	2 781,0	2 871,5	5 708,5
17	160	Solenin Alexei	Jun	RUS	2 779,0	2 674,0	2 782,0	2 497,0	2 827,5	5 609,5
18	131	Delor Julie	Jun	FRA	2 770,5	2 776,0	2 812,5	862,0	2 541,5	5 354,0
19	158	Salenek Victor		RUS	2 998,5	2 952,0	0,0	0,0	0,0	2 998,5
20	184	Iatsenko Yury		UKR	2 910,0	2 990,5	0,0	0,0	0,0	2 990,5
20	190	Stano Ján		SVK	2 990,5	2 902,0	0,0	0,0	0,0	2 990,5
22	145	Minato Kazuhiro		JPN	2 984,0	2 947,5	0,0	0,0	0,0	2 984,0
23	144	Maggi Alberto		ITA	2 975,0	2 880,5	0,0	0,0	0,0	2 975,0
24	135	Mórotz Attila		HUN	2 945,5	2 973,0	0,0	0,0	0,0	2 973,0
25	132	Holtermann Christoph		GER	2 940,5	2 972,0	0,0	0,0	0,0	2 972,0
26	139	Trudler Boaz		ISR	2 610,0	2 970,0	0,0	0,0	0,0	2 970,0
27	107	Gomes Paulo		BRA	2 886,5	2 969,0	0,0	0,0	0,0	2 969,0
28	104	Dessaucy Luc		BEL	2 895,5	2 967,5	0,0	0,0	0,0	2 967,5
29	157	Kluchkov Sergei		RUS	2 947,0	2 965,5	0,0	0,0	0,0	2 965,5
30	124	Kehrävuo Kerkko		FIN	2 886,5	2 965,0	0,0	0,0	0,0	2 965,0
31	136	Tokai Tamás		HUN	2 960,5	2 944,0	0,0	0,0	0,0	2 960,5
32	164	Andersson Ove		SWE	2 938,0	2 954,0	0,0	0,0	0,0	2 954,0
33	133	Degner Uwe		GER	2 947,0	2 908,5	0,0	0,0	0,0	2 947,0
34	188	Skrabálek Ján		SVK	2 881,0	2 944,0	0,0	0,0	0,0	2 944,0
35	172	Eifflander Antonev		GBR	2 850,0	2 943,5	0,0	0,0	0,0	2 943,5
36	125	Maver Elias		FIN	2 943,0	2 883,0	0,0	0,0	0,0	2 943,0
37	153	Kubik Sylwester		POL	2 941,5	2 937,0	0,0	0,0	0,0	2 941,5
38	180	Veimola Jiri		CZE	2 935,0	2 939,0	0,0	0,0	0,0	2 939,0
39	187	Kolesnikov Nikolay		UZB	2 938,0	2 876,5	0,0	0,0	0,0	2 938,0
40	165	Biörnwall Erik		SWE	2 801,0	2 934,5	0,0	0,0	0,0	2 934,5
41	149	Janssen Erik		NED	2 863,0	2 931,5	0,0	0,0	0,0	2 931,5
42	183	Belko Sergei		UKR	2 930,5	2 904,0	0,0	0,0	0,0	2 930,5
43	109	Magri Amilton		BRA	2 860,5	2 927,0	0,0	0,0	0,0	2 927,0
44	171	Draper William		GBR	2 925,5	2 876,5	0,0	0,0	0,0	2 925,5
45	151	Dziuba Pavel		POL	2 817,5	2 924,5	0,0	0,0	0,0	2 924,5
46	141	Rozenberg Eliezer		ISR	2 920,5	2 805,5	0,0	0,0	0,0	2 920,5
47	189	Schrek Alexander		SVK	2 885,0	2 909,0	0,0	0,0	0,0	2 909,0
48	179	Dobrovolný Radek		CZE	2 899,0	2 908,5	0,0	0,0	0,0	2 908,5
49	182	Prohorchuk Yury		UKR	2 855,0	2 904,5	0,0	0,0	0,0	2 904,5
50	150	van de Mortel Peter		NED	2 753,0	2 898,0	0,0	0,0	0,0	2 898,0
51	142	Ballesio Francesco		ITA	2 745,0	2 880,5	0,0	0,0	0,0	2 880,5
52	106	van Dort Paul		BEL	2 684,0	2 871,0	0,0	0,0	0,0	2 871,0
53	168	Germann Peter		SUI	2 868,0	2 866,0	0,0	0,0	0,0	2 868,0
54	166	Lagerquist Stefan		SWE	2 702,5	2 863,5	0,0	0,0	0,0	2 863,5
55	152	Siwik Zbigniew		POL	2 829,0	2 852,0	0,0	0,0	0,0	2 852,0
56	169	Borer Hugo		SUI	2 659,0	2 845,5	0,0	0,0	0,0	2 845,5
57	126	Karma Kai		FIN	2 605,5	2 838,5	0,0	0,0	0,0	2 838,5
58	121	Wibera Aage		DEN	2 772,0	2 837,0	0,0	0,0	0,0	2 837,0
59	101	Weinseisen Walter		AUT	2 764,0	2 834,0	0,0	0,0	0,0	2 834,0
60	114	Tellier Fred		CAN	2 833,5	2 811,5	0,0	0,0	0,0	2 833,5
61	134	Schnitz Willi		GER	2 781,5	2 833,0	0,0	0,0	0,0	2 833,0
62	105	Liber Robert		BEL	2 098,0	2 828,5	0,0	0,0	0,0	2 828,5
63	103	Weinmann Erhard		AUT	2 759,5	2 819,5	0,0	0,0	0,0	2 819,5
64	110	Milko-Tchernomorets Sera		BLR	2 726,5	2 813,0	0,0	0,0	0,0	2 813,0
65	116	Higgs Geoff		CAN	2 810,0	2 781,5	0,0	0,0	0,0	2 810,0
66	102	Wenczel Franz		AUT	2 579,5	2 809,5	0,0	0,0	0,0	2 809,5
67	137	Wadovich Zoltan		HUN	2 757,0	2 808,5	0,0	0,0	0,0	2 808,5
68	173	Dickinson Nev		GBR	2 802,5	2 637,0	0,0	0,0	0,0	2 802,5
69	163	Renecle Keith		RSA	2 621,5	2 788,5	0,0	0,0	0,0	2 788,5
70	140	Zeira Gilad		ISR	2 710,5	2 776,5	0,0	0,0	0,0	2 776,5
71	115	Doherty Kim		CAN	2 651,0	2 771,0	0,0	0,0	0,0	2 771,0
72	178	Cáni Ivan		CZE	77,0	2 763,0	0,0	0,0	0,0	2 763,0
73	122	Ludwigsen Henrik		DEN	2 585,0	2 757,0	0,0	0,0	0,0	2 757,0
74	185	Olaba Roman	Jun	UKR	2 660,0	2 741,0	0,0	0,0	0,0	2 741,0
75	148	Grigorievs Alekseis		LAT	2 724,0	2 730,5	0,0	0,0	0,0	2 730,5
76	167	Blom Biörn	Jun	SWE	2 667,5	2 718,0	0,0	0,0	0,0	2 718,0
76	161	Dugmore Roston		RSA	2 718,0	2 705,0	0,0	0,0	0,0	2 718,0
78	138	Ölbei Dávid	Jun	HUN	2 705,0	2 556,5	0,0	0,0	0,0	2 705,0
79	170	Berger René		SUI	2 689,5	795,0	0,0	0,0	0,0	2 689,5
80	162	Attfield Percy		RSA	2 643,5	2 568,0	0,0	0,0	0,0	2 643,5
81	120	Mortensen Leif O		DEN	2 536,0	2 608,0	0,0	0,0	0,0	2 608,0
82	181	Arroyo Manrique Angel	Jun	ESP	2 422,5	2 595,5	0,0	0,0	0,0	2 595,5
83	123	Horsted Jesper	Jun	DEN	2 353,5	2 524,5	0,0	0,0	0,0	2 524,5
84	111	Patsouk Valeri		BLR	2 469,5	244,0	0,0	0,0	0,0	2 469,5
85	154	Kuczynski Maciej	Jun	POL	2 455,0	2 430,5	0,0	0,0	0,0	2 455,0
86	156	Nóbrega Paulo		POR	2 077,0	2 261,5	0,0	0,0	0,0	2 261,5
87	155	Almeida José		POR	0,0	0,0	0,0	0,0	0,0	0,0

F2C

Team Racing Models

Final Results

Date
1996-07-27

Pos	No	Name	Nat	Flight 1	Flight 2	Flight 3	Semi 1	Semi 2	Final
1	218	Pennisi Roberto/Rossi Andrea	ITA	3 14 8	70Laps	Disq	3.21.6	3.25.7	7.18.1
2	233	Nazin Yuri/Vorobiev Oleg	RUS	3.23 2	3.23 0	3.20.8	3.21.5	3.34.8	Disq
2	220	Maqli Marcello/Pirazzini Elvis	ITA	Disq	3.21.8	Disq	3.22.7	Disq	Disq
4	241	Langworth Bernard/Campbell David	GBR	3 30.9	4 11.9	3.25.4	00 Laps	00 00.00	-
4	242	Fitzgerald Michael/Thomason Mark	GBR	3 25.3	3 44.7	5 03.9	00 Laps	00 00 00	-
6	232	Titov Vladimir/Yugov Victor	RUS	Disq	3.17.9	3.23.3	3.23 2	3 24 0	-
7	231	Shabashov Yuri/Ivanov Vladimir	RUS	Disq	3 21.9	3 23.7	3.23.6	83 Laps	-
8	243	Ross Malcolm/Turner Brian	GBR	3.44.2	3.23.4	3.30.8	34 Laps	3.27.0	-
9	202	Fitzgerald Rob/Prior Dennis	AUS	73 Laps	3 37.0	3.19.3	3.28.4	3 29 8	-
10	211	Gilbert Christophe/Gilbert Regis	FRA	3.31.5	98 Laps	3.24.2	00 Laps	3.30 4	-
11	203	Fischer Josef/Straniak Hans	AUT	3.20 8	3.19.4	86 Laps	3.48 2	3.33.0	-
11	235	Samuelsson Benat-Olof/Axtilius Kiell	SWE	3 18.8	3.49.2	3 32.6	3.33.0	32 Laps	-
13	244	McCollum John/Lee Bill	USA	3.23.3	82Laps	3 21.4	3 34.0	3 33 7	-
14	204	Nitsche Heinz/Nitsche Heinz jun	AUT	29 Laps	3 21 6	91 Laps	34 Laps	3 34 1	-
15	246	Ascher Aaron/Ascher Lenard	USA	3 25 2	3.57.1	67 Laps	00 Laps	3 36 9	-
16	245	Ballard John/Lambert Dick	USA	3.18.0	Disq	Disq	Disq	3 39 2	-
17	205	Dessaucy Luc/Dessaucy Jean	BEL	Disq	3.26.4	4.03.5	-	-	-
18	206	Mary Wellington/Mary Nelson	BRA	3.36.4	3 26.7	3.29 7	-	-	-
18	221	Metkemeijer Bert/Metkemeijer Rob	NED	3.26.7	87 Laps	3.37.5	-	-	-
20	238	Borer Heiner/Saccavino Cesare	SUI	3.28.0	35 Laps	Disq	-	-	-
21	230	Martinho António/Goulão José	POR	3 42.0	3.31 3	3.28.6	-	-	-
22	214	Suruque Pascal/Suruque Georges Jun	FRA	3.42.3	3.29.6	33 Laps	-	-	-
23	236	Gustafsson Jan/Olsson Göran	SWE	3.50.9	35 Laps	3.29.8	-	-	-
24	223	Wakkerman Loet/van de Weerd Jan	NED	4.05 8	3.50.5	3.30.1	-	-	-
25	237	Stjärnesund Per/Andersson Hans	SWE	3.37.9	4.34.0	3.33 2	-	-	-
26	208	Brietzke Ricardo/Wieck Rogerio	BRA	4.11.4	3.43.0	3.33 6	-	-	-
27	219	Martini Giancarlo/Losi Roberto	ITA	Disq	Disq	3.34.7	-	-	-
28	215	Leupold Erik/Engler Klaus	GER	3.38.8	3.40.2	50 Laps	-	-	-
29	251	Ivanko Alexandre/Trunkal Alexandre	UKR	3.44.5	4.03.3	3.39.2	-	-	-
30	201	Hoogenkamp Ron/Bertina Hans	AUS	4.01.9	3.40.4	4.28.9	-	-	-
30	247	Rális Martin/Fusek Petr	CZE	3.50.5	4.14.4	3.40 4	-	-	-
32	240	Giger Pascal/Studer Heiner	SUI	1 Laps	3.56.9	3 40 7	-	-	-
33	209	Jerabek John/Parent Ken	CAN	Disq	4.01.2	3.42.1	-	-	-
34	210	Fairey Richard/Maclean Lloyd	CAN	3.51.0	3.42.3	3.42.3	-	-	-
35	228	Sieida Lukasz/Puka Remigiusz Jun	POL	0.00.0	3.42.9	4.35.3	-	-	-
36	224	Bovs Alistair/Bovs Robin	NZL	3.43.6	4.21.4	3.58.9	-	-	-
37	250	Kaminski Vladimir/Moskalets Anatoli	UKR	3.57.3	0.00.0	3.43.7	-	-	-
38	216	Fauk Gerhard/Krause Bernhard	GER	50 Laps	3.44.6	35 Laps	-	-	-
39	249	Oterino Palmero J. Luis/Rodriquez Serr	ESP	4.37.3	3.46.7	4.11.0	-	-	-
40	207	Marques Fernando/Rodrigues Walmir B	BRA	20 Laps	3.47.2	4.30.5	-	-	-
41	217	Lindemann Reinhard/Schönherr Frank	GER	43 Laps	3.54.4	3.47.5	-	-	-
42	248	Martinez Victoria Angel/Crespi Sequi P	ESP	Disq	3.49.2	Disq	-	-	-
43	234	Ustinov Denis/Oreshkin Anton Jun	RUS	3.52.2	4.31.9	Disq	-	-	-
44	222	Vendel Micha/van Gemert Peter	NED	3.55.8	4.05.3	4.22 5	-	-	-
45	212	Maret Jean/Picard Fabrice	FRA	4.06.7	Disq	Disq	-	-	-
46	229	Isidro Júlio/Loureiro Joao	POR	5.46.2	4.53.3	4.21 2	-	-	-
47	225	Praus Pawel/Manowski Lukasz	POL	0.00.0	4 23.6	53 Laps	-	-	-
48	227	Kobierecki Robert/Raczynski Bartlomiej	POL	22 Laps	86 Laps	17 Laps	-	-	-
50	213	Suruque Roland/Perret Jean-Paul	FRA	77 Laps	Disq	34 Laps	-	-	-
50	226	Gumulinski Stanislaw/Braciak Marek	POL	Disq	Disq	Disq	-	-	-

F2D

Combat

Final Results

Date

1996 07 2?

Pos	No	Name		Nat															Wins
1	340	Beliaev Viacheslav		RUS	W	W	W	W	W	W	W	L	W						8
2	343	Bazulin Dmitri	Jun	RUS	W	W	W	L	W	W	W	W	W	L					8
3	333	Wakkerman Loet		NED	W	W	W	L	W	W	W	W	L						7
4	322	Karger Jiri		GER	W	W	W	W	W	W	L	L							6
4	357	Kucera Pavel		CZE	W	L	W	W	W	W	W	L							6
6	345	Blückert Mattias		SWE	L	W	W	W	W	W	L								5
6	352	Jones Mervyn	WCh	GBR	W	W	W	W	L	W	L								5
6	324	Kowark Gunnar		GER	W	W	W	W	W	L	L								5
9	350	James John		GBR	W	W	W	W	L	L									4
9	315	Lapointe Brad	●	CAN	W	W	L	W	W	L									4
9	326	Molteni Adriano		ITA	W	W	L	W	W	L									4
9	364	Tchorny Stanislav		UKR	W	W	W	L	W	L									4
13	338	Braciak Marek		POL	W	W	W	L	L										3
13	316	Forbech Henning		DEN	W	W	L	W	L										3
13	351	Frost Tony		GBR	L	W	W	W	L										3
13	346	Karlsson Niklas		SWE	W	W	L	W	L										3
13	342	Necheukhin Nikolay		RUS	W	W	L	W	L										3
13	335	Olijve Rik		NED	W	W	L	W	L										3
13	301	Owen Robert		AUS	W	W	W	L	L										3
13	306	Staffel Gunter		AUT	W	L	W	W	L										3
13	367	Usmanov Iaroslav	Jun	UKR	W	W	W	L	L										3
22	318	Bieragger Ole		DEN	W	W	L	L											2
22	329	Brokans Peteris		LAT	L	W	W	L											2
22	341	Faizov Boris		RUS	W	W	L	L											2
22	321	Henriksson Kim		FIN	W	L	W	L											2
22	309	Jolnerkevitch Igor		BLR	L	W	W	L											2
22	317	Korup Allan		DEN	W	L	W	L											2
22	314	Mackenzie Ivan	●	CAN	W	W	L	L											2
22	356	Rudner Mark	● Jun	USA	W	L	W	L											2
22	325	Sagner Enrico	Jun	GER	L	W	W	L											2
22	353	Stubblefield Dick	●	USA	W	L	W	L											2
32	355	Cleveland Mitchell	●	USA	L	W	L												1
32	303	Comiskey Michael		AUS	W	L	L												1
32	336	Gibson Bryce Charles		NZL	L	W	L												1
32	331	Jalunin Boris		LAT	W	L	L												1
32	347	Karlsson Jonas	Jun	SWE	W	L	L												1
32	305	Königshofer Rudolf		AUT	W	L	L												1
32	313	Mackenzie Pat	●	CAN	L	W	L												1
32	365	Milenin Igor		UKR	L	W	L												1
32	328	Pirazzoli Ivo		ITA	L	W	L												1
32	308	Serafim Mauricio		BRA	L	W	L												1
32	362	Simal Melgar Roberto	Jun	ESP	L	W	L												1
32	319	Valo Jari		FIN	W	L	L												1
44	344	Behrem Mats		SWE	L	L													0
44	330	Brods Edvins		LAT	L	L													0
44	361	Bruguera Tous Enrique		ESP	L	L													0
44	348	Disler Michael		SUI	L	L													0
44	360	Garcia Vaquero Juan Jos		ESP	L	L													0
44	323	Herbert Andreas		GER	L	L													0
44	320	Leino Laura		FIN	L	L													0
44	358	Marek Ladislav		CZE	L	L													0
44	354	McKinzie Joe	●	USA	L	L													0
44	359	Meizlik Tomás		CZE	L	L													0
44	363	Mendoza González Javier		ESP	L	L													0
44	366	Mikhailov Denis		UKR	L	L													0
44	304	Mühlparzer Markus	Jun	AUT	L	L													0
44	327	Pachetti Andrea		ITA	L	L													0
44	307	Torres Alexandre		BRA	L	L													0
44	339	Urbanski Pavel	Jun	POL	L	L													0
44	334	Wakkerman Monique		NED	L	L													0
44	349	Whitlance Mike		GBR	L	L													0
44	332	Viksna Ivo	Jun	LAT	L	L													0
44	337	Wold Jan		NOR	L	L													0

Ah, fall. The cool breezes. The turning
of the leaves into a myriad of bright hues,
the sweet aroma of nitromethane in the air...
Nitromethane?
Yes, it's time for the seventh annual...

REALLY RACING! 1996

In a new location!

A complete day of control-line model aviation racing, featuring:

Mouse Race Class I
(including a junior class race)
Mouse Race Class II
AMA Goodyear
Slow Rat Race
Rat Race
Northwest Sport Race
Northwest Super Sport Race
Flying Clown Race

The details...

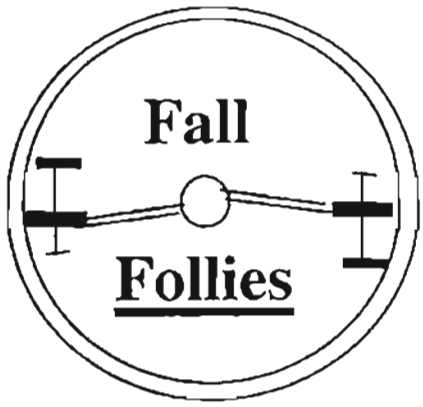
Date: Saturday, Oct. 12, 1996
Place: Delta Park, Portland, Ore.
Prizes: Trophies through third place
Entry fees: $5 per event, $25 maximum
First race at 9 a.m.; events run in order listed above.

Contest Director:
John Thompson
2456 Quince St., Eugene, OR 97404

Contest sponsored by the Eugene Prop Spinners and the Northwest Fireballs

Academy of Model Aeronautics membership required

The Eugene Prop Spinners invite you to the 10th annual Prop Spinners ...



A pleasant autumn afternoon of control-line competition flying — **in a new location!**

The events...

starting at 9 a.m.:

Precision aerobatics

In four skill classes:
BEGINNER — Using AMA beginner pattern
INTERMEDIATE ADVANCED
EXPERT

The details...

Date: Sunday, Oct. 13, 1996
Place: Delta Park, Portland, Ore.
Prizes: Trophies through third place
Entry fees: $5 per event

Contest Director:
John Thompson
2456 Quince St., Eugene, OR 97404

Contest sponsored by the Eugene Prop Spinners and the Northwest Fireballs

Academy of Model Aeronautics membership required

NW REGIONALS COMPETITION RECORDS

BEST RECORDED PERFORMANCES AT THE EUGENE AND ROSEBURG, OREGON NORTHWEST REGIONAL CL CHAMPS BY ALL ENTRANTS.

1/2 A SPEED	132.39	BILL NUSZ JERRY ROCHA	1992 1996
A SPEED	167.84	JERRY ROCHA	1996
B SPEED	179.75	FRANK HUNT	1994
D SPEED	185.88	GLEN DYE	1996
JET SPEED	187.62	BILL NUSZ	1995
FORMULA 40	152.04	BILL NUSZ	1996
21 SPORT SPEED	147.00	CHUCK SCHUETTE	1994
FAI SPEED	179.25	CHRIS SACKETT	1996
1/2 A PROF. PROTO	103.82	JERRY ROCHA	1996
21 PROTO SPEED	125.74	CHRIS SACKETT	1996

(RACING RECORDS REFLECT ONLY FINALS)

MOUSE RACE I	4:34.59	PAUL GIBEAULT	1992
MOUSE RACE II	10:39.59	PAUL GIBEAULT	1991
AMA GOODYEAR	6:00.34	LES AKRE	1995
NW GOODYEAR	8:01	JULIE RICE	1995
SLOW RAT RACE	6:14.9	VIC GARNER	1987
RAT RACE	6:04	BILL CAVE	1994
NW SPORT RACE	8:32	ROGER McINTYRE	1996
NW SUPER SPORT	7:57	RICHARD McINTYRE	1996
NW FLYING CLOWN	265	TODD RYAN	1996
CLASS I CARRIER	306.8	ROY BEERS	1995
CLASS II CARRIER	329.96	ORIN HUMPHRIES	1987
PROFILE CARRIER	275.79	TODD RYAN	1996
.15 CARRIER	208.5	TODD RYAN	1995

FLYING LINES is produced by a staff of volunteers interested in keeping lines of communication open between Northwest region control line modelers. *FLYING LINES* is independent of any organization, and is made possible by the financial support of its base of subscribers.

The *FLYING LINES* staff: John Thompson, Fred Cronenwett, Orin Humphries, Jim Cameron, Paul Gibeault, Gerald Schamp; Mike Hazel, editor. Contributions for publication are welcomed. Any material submitted to the editor which is not for publication, should be indicated as such. Duplication of contents is permissible, provided source is acknowledged.

FLYING LINES is published nine times per year. Subscription rate is $13.00 for USA, and $15.00 for Canada (U.S. funds). Subscription expiration is noted on the mailing label-issue number listed after name.

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AUG 23 PM 1996

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SALEM, OR 973
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