

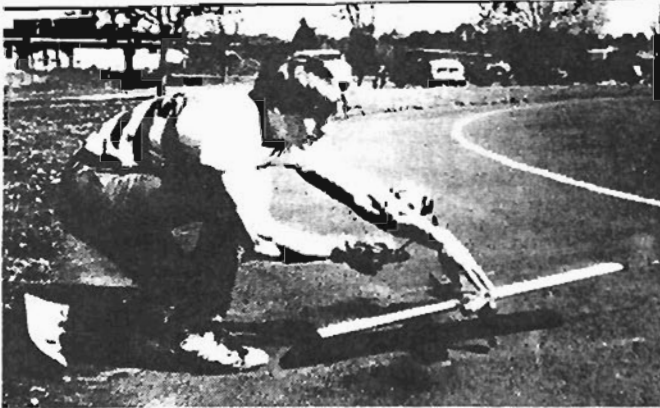
FLYING LINES



NEWS OF NORTHWEST CONTROL LINE MODEL AVIATION

P.O. BOX 177, KILA, MONTANA 59920

EDITOR: PAT LEONARD



Blake Jensen pits for Wayne Drake in super sport race.



Circuit Winners - Sport Race



Dave Green releases a super sport racer.



Circuit winners - Super sport race.

Drizzle Circuit photos by Jim Cameron.



1952! Forster covered "PDD" is Doug Wendts first working C-L model. Wendt Photo

ISSUE # 89

April, 1988

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COCKPIT CHATTER



NOTES FROM THE EDITORS' DESK

Hi guys! Sorry this important issue is late. I'll do better next time. (Promise!)

Mail call- There is a tiny shack in the boondocks. (Kila MT. Post Office) On the stairs and around the door are scattered the bodies of hapless victims. Yes, racing fans, it's time to check the mail and I do get a little excited! Why once I even (inadvertantly) elbowed the owner of Box 176 pretty good when she got a little too pushy! Very many of you have written in to renew a subscription, to inform us of the state of things control-line all over, and even to say "good job" to the staff. In fact there is so much mail that much of it will have to be carried over to the next issue!

I got so excited last month that I over-looked many things. Well, better late than ever. So many people were helpful that I hate to single out one and say he did this or that, but I WOULD like to give Mike Hazel a pat on the back. He was quite patient and helpful with me when I was figuring stuff out. Not only that he helped to found this little fanzine and published it for 8½ YEARS! LOTTA work.

REGIONALS FEVER- Less than a month to go before the Northwest Regionals, and boy am I excited! And PREPARED (as I'm sure many of you are). All I've got to do is: Work overtime to pay for the trip, float some white-water before runoff is over, practice flying 'till I'm at least good enough that those crazy Canadians and Californians won't laugh at me! (Most Canadians I know will laugh at anything though!), and design and build my planes. I've started the double duty stunt-scale job (cut 4 pieces of balsa), but I still must restore my 2 year old slo combat-NWSS-Stunt backup plane to a flyable condition. It has NO ribs in the inside wing (control system pulled out one magic day! Took all the ribs, most of the cap strips, and none of the covering-) I'll see you there if you still have this great contest after reading this! Seriously this will be my first contest and I'm really fired up. I plan to have all kinds of fun and meet a lot of people!

Beginner's Day! In this issue you will find a report on the Seattle Skyraider's "Beginners Day". Not to be out done I let one of these happen to me in Missoula Montana. Nothing planned, just forced the crowd to fly my trainers. (which I always TRY to keep with me in A-1 condition, but seldom do.) Surprisingly the planes worked great all evening (no dirt in REED, no damage) and 3 kids soloed, and one of their dads wrecked many times! I even got to fly once, and put on what I thought was a pretty good example of "speed stunt" with one of my ½A esueda-stunters. All involved including the "CL" and the father had fun.

I see the bottom of the page coming, and I haven't even thought about something I really wanted to say, so I guess I'd better get to it. I know it's alot to ask, but if everyone who can could round up a subscriber it would really vitalise this publication. Why if one of you bring one in: it would practically turn into a magazine overnight with more of everything! Whadaya say? One possibility is to leave a copy of the NL in your hobby shop with a few photo copies of the subscriber form. See You! - Pat

calm before the storm, evidently. Only ten entries in the 3X1? Yeah, they were predicting all kinds of nasty things to fall out of the sky. Well, those of you who stayed home in bed missed a great day of flying and some close competition. Randy Schultz did a good job of CD'ing his first contest. Dan Cronyn came out and judged the stunt flights. Ed McCollough, AMA District XI UP, stopped by and shared a few words of wisdom with us. John Hall came out and helped run the contest but didn't enter. Dick Salter was out piloting race planes and helping out but didn't enter. George Mickey came out and cleaned up most of the flying honors. George was first overall, first in NWSS, and first in stunt. Randy Schultz was first in balloon bust and third overall. Dave Mullens was third overall. Wes Mullens was the only junior entered and took home the top junior trophy. However, Wes raced in NWSS with the big kids. Wes was not only in with the big kids, but beat his dad out to make the final heat. Being nine years old and four foot two is a little bit of a handicap when flying in the same circle with Dick Salter and Jason Huntress. They all did a good job of coping with the height differential with Wes having to resort to a modified wingover to get over Jason's head from time to time.

Balloon Bust was a very close affair this year, no runaway balloon poppers. Some of the old pro B-busters didn't fare so well.

An interesting footnote to stunt. George Mickey was the only pilot to receive pattern points. For various reasons all the other fliers had trouble over running or running short on fuel. A thank you to all the competitors for helping out and keeping things on a friendly competitor basis. A big thank you to Glen Salter for making up a pot of soup. You fairweather fliers missed a good contest.

Results - SKYRAIDER 3x1 Contest

SUPER SPORT RACE - 10 Entries

	HEAT TIME	PLACE	POINTS
Glenn Salter	4:55		
George Mickey	5:39		
Wes Mullens (Junior)	6:19		
Dave Mullens	6:58	4	7
Roy Nakano	7:10	5	6
Jason Huntress	7:32	6	4
Bob Danielson	7:45	7	4
Rick Salter	8:47	8	3
Randy Schultz	9:18	9	2
Dick McConnell	DD	10	1

Feature

George Mickey	11:31	1	10
Glenn Salter	11:45	2	9
Wes Mullens	136 laps	3	8

OVERALL 3x1 RESULTS
 NEXT PAGE

BALLOON BUST - 10 Entries

	PLACE	SCORE	POINTS
Randy Schultz	1	688	9
Dick McConnell	2	564	8
Rick Salter	3	520	7
Dave Mullens	4	460	6
Bob Danielson	5	327	5
Glenn Salter	6	310	4
Roy Nakano	7	292	3
George Mickey	8	49	2
Jason Huntress	9	47	1

JUNIOR BALLOON BUST

Wes Mullens	1	709	1
-------------	---	-----	---

STUNT - 10 Entries

	PLACE	SCORE	POINTS
George Mickey	1	420	10
Randy Schultz	2	357	9
Dave Mullens	3	332.5	8
Dick McConnell	4	317	7
Jason Huntress	5	288	6
Glenn Salter	6	261	5
Rick Salter	7	248	4
Roy Nakano	8	230	3
Bob Danielson	9	183	2
Wes Mullens	10	95	1

OVERALL SkI - 10 Entries
POINTS

1) George Mickey	22
2) Dave Mullens	21
3) Rands Schultz	20
4) Glenn Salter	18
5) Dick McConnell	16
6) Rich Salter	14
7) Roy Nakano	12
Jason Huntress	12
9) Bob Danielson	11
10) Wes Mullens	10

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BEGINNERS DAY

from THE SKYWRITER - 15559 Palatine Ave. N. - Seattle WA. 98133
EDITOR--Dave Mullens

Wow, a beginners day and no rain, no snow. It was hard adjusting to weather in the sixties with a fairly stiff breeze off the sound. February 27 was a beautiful day and we had a good turnout of members. Ten beginners of all ages gave flying a try. Since it was such a nice day, most of the beginners we just snagged while they were walking by on the trail to the beach or into the woods. One of our newer junior members, Japhet Kataen, not only flew the trainer un-assisted, but piloted his own Ringmaster for the first time. Hope to see Japhet out on the contest circles this coming year. Dick McConnell was the instructor for the day. Wes Mullens flew one of the trainers from a football helmet with a pylon for the first time. (what a crock). We should consider doing another beginners day event later in the year, maybe over at Marymoor and have a picnic along with the flying activities

UGMC - March 13, 1988

NORTHWEST SPORT RACE - 6 Entries

	ROUND 1	ROUND 2	FEATURE	POINTS
1) Ron Solo	4:29	4:15	8:41	6
2) Bruce Duncan	4:35	Pass	8:54	5
3) Marty Higgs	4:25	4:13	9:12	4
4) Steve Walther	4:56	4:59	DNF	3
5) Barrie Shandel	5:49	5:23		
6) Frank Boden	5:43	7:01		

IS SPORT RACE - 7 Entries

	ROUND 1	ROUND 2	FEATURE	POINTS
1) R. Dawson	DNF	4:37	8:52	7
2) Ken Burton	4:26	PASS	9:29	6
3) Frank Boden	6:49	6:15	11:12	5
4) Barrie Shandel	4:13	PASS	11:18	4
5) Henry Hardik	5:23	4:03		
6) Steve Walther	7:16	6:07		
7) Greg Samsonow	DNF	6:34		

THE DRIZZLE CIRCUIT

ROUND and ROUND In the RAIN?



DRIZZLE CIRCUIT # 5 - April 9, 1988
compiled by Dick McConnell

NORTHWEST SPORT RACE - 9 Entries					
<u>HEAT 1</u>					
Cameron	4:27	S&S	4:35	McConnell	4:45
Mickey	4:40	SHT	4:55	NRT	4:47
Green	5:11	Nakano	9:09	Drake	4:48
<u>HEAT 2</u>					
Cameron	4:32	Drake	4:17	Mickey	4:41
Green	4:33	S&S	4:59	Nakano	4:47
McConnell	4:39	SHT	5:56	NRT	5:19
<u>HEAT 3</u>					
McConnell	4:26	SHT	5:22	S&S	4:38
Mickey	4:35	NRT	5:32	Nakano	4:45
Green	5:27	Drake	6:16	Cameron	DQ
<u>FEATURE</u>					
1)McConnell	8:41	POINTS	9	3)Mickey	9:48
2)S&S	9:10		8	4)SHT	10:14
					POINTS
					7
					6

NORTHWEST SUPER SPORT RACE - 8 Entries					
<u>HEAT 1</u>					
Drake	3:46	Green	3:37	SHT	3:58
Mickey	5:38	S&S	3:50	McConnell	5:39
NRT	7:21	Cameron	4:13		
<u>HEAT 2</u>					
Green	3:23	NRT	3:57	SHT	4:04
Drake	3:51	McConnell	7:23	Cameron	4:15
S&S	5 laps			Mickey	6:11
<u>HEAT 3</u>					
Drake	3:30	SHT	3:46	S&S	3:46
Green	3:39	NRT	4:24	McConnell	4:34
Cameron	5:33	Mickey	6:15		
<u>FEATURE</u>					
1)Drake	7:44	POINTS	8	3)Green	9:28
2)SHT	8:26		7	4)NRT	3:57 heat
					POINTS
					6

DRIZZLE CIRCUIT POINTS - April 9, 1988

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NORTHWEST SPORT RACE
5 Contests - 46 Entries

1) Dave Green	30
2) Wayne Drake	26
3) S&S	23
4) Nitroholics	18
5) SHT	17
6) Jim Cameron	10
7) Dick McConnell	9
8) George Mickey	7
9) Ron Lalo	6
10) Bruce Duncan	5
11) Marty Higgs	4
12) Steve Walther	3

NORTHWEST SUPER SPORT RACE
5 Contests - 46 Entries

1) Wayne Drake	31
2) George Mickey	24
3) Dave Green	23
4) Nitroholics	21
5) Jim Cameron	14
6) S&S	10
7) Glenn Salter	9
8) Wes Mullens	8
9) SHT	7
Dave Mullens	7

DRIZZLE CIRCUIT POINTS TOTAL

NORTHWEST SPORT RACE

1) Dave Green	46
2) Wayne Drake	41
3) S&S	34
4) Jim Cameron	29
5) Nitroholics	27
6) SHT	22
7) Dick McConnell	21
8) George Mickey	18
9) Danielson	12
10) Roy Nakano	9
11) Jason Huntress	6
12) Tom Strom	3
13) Tony Huber	1
Jim Booker	1

NORTHWEST SUPER SPORT RACE

1) Wayne Drake	37
2) Dave Green	34
3) S&S	26
4) Nitroholics	24
5) SHT	18
George Mickey	18
7) Jim Cameron	14
8) Dick McConnell	11
9) Danielson	10
10) Tom Strom	5
11) Jason Huntress	4

Number of times in FEATURE RACE

NORTHWEST SPORT: Dave Green 4 - Wayne Drake 4 - S&S 4 - Jim Cameron 2 - Nitroholics 2 - SHT 2 - Dick McConnell 1 - George Mickey 1

NORTHWEST SUPER SPORT: Wayne Drake 4 - Dave Green 4 - S&S 2 - Nitroholics 2 - SHT 1 - Jim Cameron 1 - George Mickey 1

FAST HEAT - SPORT: 4:09 Dave Green (March)
SUPER SPORT: 3:23 Dave Green (April)

FAST FEATURE - SPORT: 8:31 Dave Green (March)
SUPER SPORT: 7:20 S&S (December)

DRIZZLE CIRCUIT SUMMARY

by Dick McConnell

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SPORT RACE	DEC.		JAN.		FEB.		MAR.		APR.	
	HT.1	HT.3	HT.1	HT.3	HT.1	HT.3	HT.1	HT.3	HT.1	HT.3
	HT.2	FINAL	HT.2	FINAL	HT.2	FINAL	HT.2	FINAL	HT.2	FINAL
Dave	4:16	4:17	4:42	4:19	4:14	4:17	5:20	4:05	5:11	5:27
Green	4:21	8:50	4:22	9:03	4:13	8:58	4:13	8:31	4:33	
Wayne	4:27	4:27	4:57	4:55	4:50	4:17	NT	4:50	4:48	6:16
Drake	4:53	8:56	4:34	DNF	4:28	8:55	4:17	9:46	4:17	
S&S	4:30	4:51	4:38	DNS	4:34	4:31	4:29	4:34	4:35	4:38
	4:30	DNF	DNF		4:37	9:39	4:34	DNF	4:59	9:10
Jim	4:27	4:30	4:34	4:38	4:40	4:31	5:24	4:39	4:27	00
Cameron	4:30	10:34	5:52	9:28	4:49		4:28		4:32	
Nitroholics	4:53	5:25	4:46	4:42	5:00	4:42	4:33	4:41	4:47	5:32
	4:41		4:58	9:42	4:44		4:41	9:18	5:19	
SHT	4:36	4:29	5:05	4:41	4:36	4:46	4:55	4:45	4:55	5:22
	4:46		4:40		4:36	10:04	4:49		5:56	10:14
Dick	4:55	5:07	5:56	6:18	8:04	5:30	4:54	5:06	4:45	4:26
McConnell	5:26		5:40		5:45		6:03		4:39	8:41
George	5:09	5:03	00	4:48	4:46	5:45	6:21	4:58	4:40	4:35
Mickey	8:49		4:43		6:24		4:55		4:41	9:48
Bob	4:37	5:29	5:22	5:50	4:56	4:45	5:32	4:40		
Danielson	4:43		4:44		4:56		5:12			
Ken	7:44	5:15	5:05				5:45	4:35	9:09	4:45
Nakano	DNS		DNF				4:35		4:47	
Jason	5:46	4:42			5:27	5:33				
Huntress	6:46				5:52					
Tom			5:01	4:39						
Strom			5:24							
Tony	4:59									
Huber										
Jim	4:52									
Booker										

SUPER SPORT RACE	DEC.		JAN.		FEB.		MAR.		APR.	
	HT.1	HT.3	HT.1	HT.3	HT.1	HT.3	HT.1	HT.3	HT.1	HT.3
	HT.2	FINAL	HT.2	FINAL	HT.2	FINAL	HT.2	FINAL	HT.2	FINAL
Wayne	4:23		4:45	3:35	3:52	3:46	4:16	4:01	3:46	3:36
Drake	4:07	8:08	4:50	7:55	4:27		5:32	7:52	3:51	7:44
Dave	3:40		4:10	3:43	4:17	3:57	6:33	3:55	3:37	3:39
Green	3:28	12:31	3:32	7:30	4:27	9:07	3:55		3:23	9:28
S&S	3:27		4:09	3:50	5:51	4:05	3:30	3:35	3:50	3:46
	3:26	7:20	00		3:59		3:33	7:24	DNF	
Nitroholics	3:48		3:54	3:48	3:42	4:14	3:32	4:07	7:21	4:24
	3:45		3:58	8:10	3:44	7:46	3:29		3:57	
SHT	3:58		4:10	4:29	5:02	5:02	4:31	7:23	3:58	3:46
	4:59		7:05		3:48		4:25		4:04	8:26
George	8:22		5:18	4:19	4:20	4:15	7:11	4:06	5:38	6:15
Mickey	5:10		4:03		4:04	DNF	4:53		6:11	
Jim			3:41	NT			4:37	3:50	4:13	5:39
Cameron			3:39				4:08	9:27	4:15	
Dick	5:30				4:46	4:51	5:24	6:10	5:39	4:34
McConnell					4:33		6:19		7:23	
Bob	8:19		DNF	5:11	4:41	8:11	7:19	4:51		
Danielson	4:19		5:36		4:44		6:53			
Tom	4:42		4:48	5:41						
Strom	4:35		5:27							
Jason	5:40				5:50	DNF				
Huntress	5:30				7:20					

COMPETITION POINTS
by Dick McConnell

NORTHWEST SPORT RACE
5 Contests - 46 Entries

1)Dove Green	30
2)Wayne Drake	26
3)S&S	23
4)Nitroholics	18
5)SHT	13
6)Jim Cameron	10
7)Dick McConnell	9
8)George Mickey	7
9)Ron Salo	6
10)Bruce Duncan	5
11)Marty Higgins	4
12)Steve Walther	3

NORTHWEST SUPER SPORT RACE
5 Contests - 46 Entries

1)Wayne Drake	31
2)George Mickey	24
3)Dove Green	23
4)Nitroholics	21
5)Jim Cameron	14
6)S&S	10
7)Glenn Salter	9
8)Wes Mullens	8
9)SHT	7
Dave Mullens	7

OVERALL RACING - 11 Contests 99 Entries

1)Wayne Drake	57
2)Dove Green	53
Nitroholic	39
3)S&S	33
5)George Mickey	31
6)Jim Cameron	24
7)SHT	20
8)Glenn Salter	9
Dick McConnell	9

10)Wes Mullens	8
11)Dave Mullens	7
R. Dawson	7
13)Ron Salo	6
Ken Burton	6
15)Bruce Duncan	5
Frank Boden	5
17)Marty Higgins	4
Barrie Shandel	4
19)Steve Walther	3

PRECISION AEROBATICS

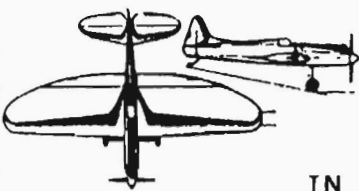
1 Contest - 10 entries

1)George Mickey	10
2)Randy Schultz	9
3)Dave Mullens	8
4)Dick McConnel	7

BALLOON BUST

1 Contest - 9 entries

1)Randy Schultz	9
2)Dick McConnell	8
3)Rick Salter	7
4)Dave Mullens	6



Tom Dixon
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JUNIOR BALLOON BUST

1 Contest - 1 Entry

1)Wes Mullens	1
---------------	---



By John Thompson

Golden finish to DC #10

The Northwest Sport Race Drizzle Circuit celebrated a Golden Anniversary of sorts on April 10, as Northwest racers completed their 10th Drizzle Circuit season with the 50th contest.

And it was one of the best racing winters ever for a number of reasons:

- * Almost rainless, windless weather. Contest No. 5 of the 1987-88 season was held in 75-degree weather under sunny skies.
- * Excellent turnout of racers, from start to finish.
- * Excellent quality racing, with the "DNF" almost non-existent. There were very few mishaps of any kind, no significant disputes or difficulties.
- * Excellent competition — with all three top places uncertain going into the final race of the season.
- * Some excellent performances by some people who have paid their dues over time. They include Dick McConnell, with his first win in a feature race, and Wayne Drake and his pit crew chief, Blake Jensen, who swept to a win in Northwest Super Sport Race, unseating master Dave Green for the first time years. Noteworthy performances also came from Jim Cameron, Bob Dantelson, George Mickey and newcomer Roy Nakano.

Congratulations to the top five in each category (I assume that full results will be elsewhere in the newsletter):

Northwest Sport Race: 1. Dave Green. 2. Wayne Drake. 3. Salter & Salter Racing Team. 4. Jim Cameron. 5. Nitroholics Racing Team.

Northwest Super Sport Race: 1. Wayne Drake. 2. Dave Green. 3. Salter & Salter Racing Team. 4. Nitroholics Racing Team. 5. George Mickey and Salter-Hall Team, tie.

How did I get away from the field without writing down the fast-heat times? Anyway, they both belonged to Dave Green!

Here's a rundown of the winners of the Drizzle Circuit for the past 10 years:

- 1978-78 NWSR (old rules) — Mike Hazel**
- 1979-80 NWSR (old rules) — John Thompson**
- 1980-81 NWSR — Dick Salter**
NWSS — Mike Hazel
- 1981-82 NWSR — Dick Salter**
NWSS — Mike Hazel
- 1982-83 NWSR — Greg Beers**

NWSS _ Dave Green
 1983-84 NWSR _ Dave Green
 NWSS _ Dave Green
 1984-85 NWSR _ Beers-Cole Racing Team
 NWSS _ Dave Green
 1985-86 NWSR _ Dave Green
 NWSS _ Dave Green
 1986-87 NWSR _ Dave Green
 NWSS _ Dave Green
 1987-88 NWSR _ Dave Green
 NWSS _ Wayne Drake

The success of the series for the past 10 years confirms the excellence of Northwest Sport Race and Northwest Super Sport Race as events of quality for both experts and novices. We're already looking forward to DC No. 11. See you at Delta Park, Portland, on Dec. 11, 1988.

* * *

Hey, you guys that like to read your names in print and get all the news about where the contests are, who won 'em, and what they flew.

Your editor, Pat Leonard, needs articles, photos, and more subscribers to make *Flying Lines* continue to serve as the Northwest's communications net work.

Don't let Pat, and your fellow modelers, down by just being a reader. Be a writer and a worker, too!

* * *

A Regionals update _ To make the new Eugene flying site even better for modelers and spectators alike, and to reduce traffic congestion around Mahlon Sweet Airport, the flying site plan has been revised.

Current plan is for *three* asphalt circles, not four as previously announced. This plan was adopted because of airport management's wish to provide 200 parking spaces during the contest. The only effect on competition events will be that carrier will be flown over grass.

Looking forward to seeing all of you there!

--John Thompson, 1505 Ash Ave., Cottage Grove, OR 97424

LARRY MILES - OUT ON A LIMB

AERODYNAMIC THEORY

March 17, 1986



Page 10

Dear Larry (Miles),

Read with interest your notes in the recent Flying Lines. As I'm the editor of our local newsletter, I'm always on the lookout for material. AND since I'm an inveterate racer, I'M always interested in theories such as yours regarding asymmetrical airfoils.

Could I get you to expand on this one point? I would love to publish it and see what the reaction will be. As I am sure you have in Missouri, we have some rather opinionated folks here, and they dearly love a good argument. Please break it down as far as applicability to mouse, Goodyear, rat, and sport race wings.

I promise to send copies of your work and any follow up arguments.

Sincerely,

Chris Peter

1034 East Adelaide DR.

Tucson, AZ, 85719

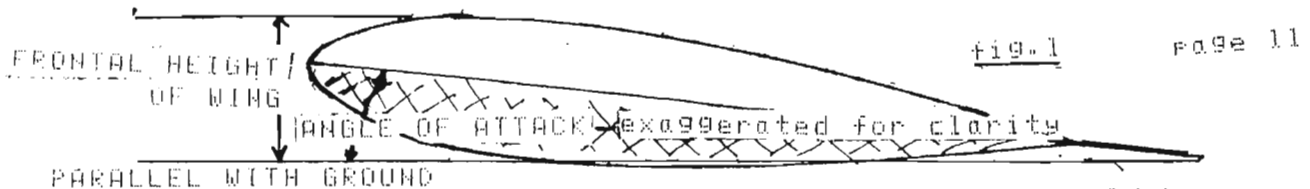
Dear Chris,

Your question and it's answer is probably of rather widespread interest, so I thought it best to answer it through Flying Lines, rather than directly. Feel free to use this or any follow up in your local newsletter as you see fit. (Credit your source!) And if your readers respond I would be happy to address the issues in this column.

Dismissing any arguments about wind gusts, centrifugal force from flying in circles, ect. as being irrelevant to this discussion the forces acting on an airplane in flight are thrust, drag, lift, and gravity. At equilibrium conditions (the craft is neither speeding up or slowing down, nor gaining or losing altitude) the first two items are equal and opposite, and the latter two items are equal and opposite; furthermore any rotational moments set up by the thrust and drag forces must be exactly canceled by the lift and drag forces. Otherwise the craft is in the process of climbing or diving and not in equilibrium as postulated.

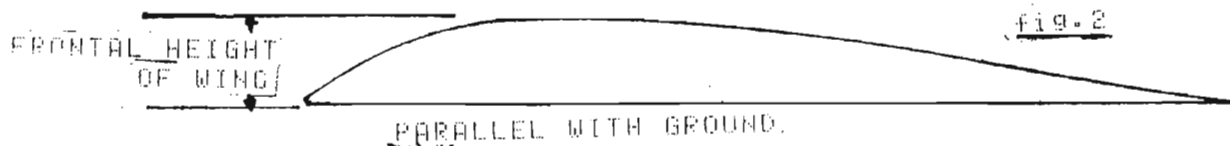
A plane whose airfoil is symmetrical flies at some angle of attack in order to generate the required lift when flying at equilibrium conditions. That means the thrust line of the engine, assuming that it is parallel with the wing chord (optimum mounting) is not parallel with the line of flight, but actually directed upwards at some slight angle. Please note also that the symmetrical airfoil is not flying with it's chord parallel to the line of flight, but rather the leading edge is elevated with respect to the trailing edge sufficiently to generate the needed lift to oppose the aircraft and lines. In effect the symmetrical airfoil has become asymmetrical by crabbing through the air with an elevated leading edge. Flying at the required angle of attack means additional drag as opposed to what would generated were it possible for the symmetrical airfoiled craft to fly with a zero angle of attack. (That is not possible except with a zero weight aircraft.) Since the symmetrical airfoil must in effect become an asymmetrical airfoil in flight; the obvious question is: Why not use an asymmetrical airfoil to begin with? Indeed, why not? Except for certain classes of sport aircraft whose flying attitude requires them to perform as effectively inverted as upright, combat aircraft, stunt ships, and scale models whose full scale counterparts have symmetrical airfoils, any model aircraft could benefit from using asymmetrical airfoils

when speed and or weight is a consideration. ie carrier models, speed models, all racing classes including mouse, team, goodyear, and rat. In general the slower or heavier a model is the more asymetry the optimum airfoil needs to produce the required lift.



In fact the optimum airfoil for speed considerations would be an extremely thin wing with an almost flat bottom. Unfortunately (or rather FORTUNATELY, since we all enjoy a challenge) our building materials constrain us using thicker airfoiled wings

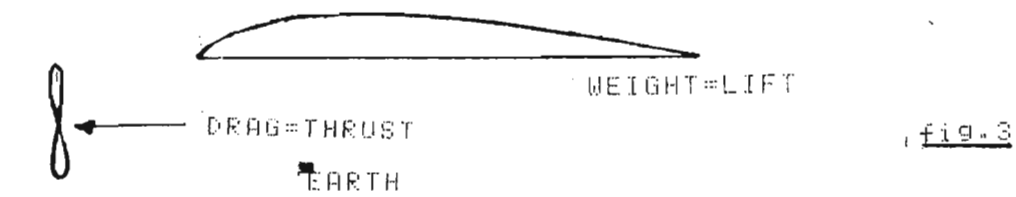
Please note that in fig. 1 above the cross hatched area is virtually useless in a speed model, but that is what you get with a symmetrical airfoil. Now look at what happens if we remove the cross-hatched area as in fig. 2 below.



The frontal height of the second wing is less than half that of the first, with decreased drag as a reward.

This is a simplistic example with some unproved assumptions such as both airfoils produce equal lift or nearly equal lift for a given amount of thrust. (Actually since the inherent assumption is that the asymmetrical in an otherwise identical model would give a faster speed than the symmetrical it would be necessary for the aircraft with the asymmetrical airfoil to produce equal lift only at it's greater speed.) There several other difficulties with this simplified example as well, but I hope that these diagrams clarify my still firmly held conviction that an asymmetrical airfoil is best if the airfoil is an optimum one. Don't ask me to give you the optimum airfoil for a 200 mph jet whose flying weight is 3.75 pounds or a 75 mph mouse racer whose weight is 3.5 ounces. I can't and wouldn't if I could.

As one final point for my argument look at fig. 3, which represents a shoulder wing racer of whatever ilk turns you on.



Lift=weight, thrust=drag, the rotational moment created by the lift-weight couplet tends to rotate the nose earthward, the rotational moment created by the thrust-drag couplet tends to rotate the nose skyward, and (you've probably guessed) the two rotational couplets are equal in value. (Hypothetical and possible scenario). Note: since the model is a high-wing model the center of drag is located above the thrust line. Nothing has said thus far about the elevator position. Bet you can guess it's location. Yes. Zero elevation at equilibrium and used only for passing, landing, ect. I challenge you to postulate another configuration that can produce less drag and consequently greater speed. I rest my case, at least temporarily

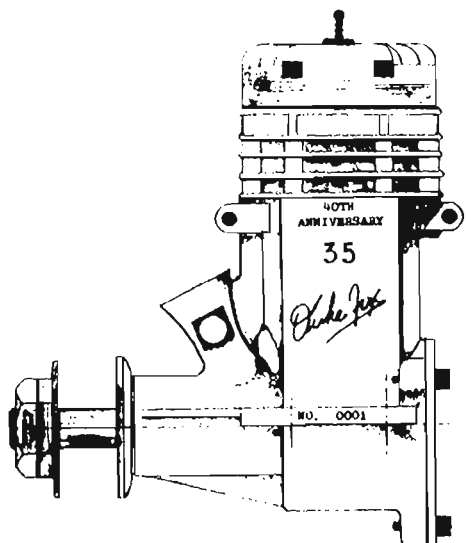
Larry Miles - 2112 Scott Ave. - Independence, MO. 64052

READER'S ENGINE CORNER

By: Eric Williams

Reader's Engine Corner is a great idea; especially for us ancient ones. However I think you imply that there is some other engine, or that there is the possibility that some other engine exists. Come on! There is the Fox Stunt .35 and a flock of imposters! That's bush-wah of course, but I'm a Fox collector. I'm really interested in getting a 40th anniversary edition produced by the good Duke to mark the Jan. '89 40th anniversary of the Stunt .35. The drawing is of a proposal I sent Duke some time ago. His reaction was positive, and I think we'll probably see it, but more letters to him on the subject couldn't do any harm.--Eric Williams, P.O. Box 45I, Vandalia Ill. 6145377

(Twice in a row! What is this; a Fox conspiracy!?)
(How about it Duke? Everybody will buy one! pml)



40th ANNIVERSARY FOX STUNT .35

KINKS COLUMN?

by Leta Leonard

I'd like to start a kinks column. It could be a separate feature, or could be run through "Airmail". I think "FLYING LINES" is a good place for this because it is C-L oriented, and questions can be answered in a reasonable time. I suggest making notes in the shop, so you don't forget a small, but helpful hint.

After THREE wrecks, varying from a broken prop to a demolished airplane, I am FINALLY convinced that you should not try to kill a poorly running engine by loading. Just suffer the bad run.
(Or GENTLY land the plane. pml)

Pat says: If you hate masks or cumbersome safety practices, use "low tech" materials and simple tools.

Film Covering Ideas

- Clean iron with alcohol before heating. (Sand with 600 grit if needed, dip it on a cotton rag to absorb excess heat and to prevent dust and scratches)
- Start with LOW heat and increase gradually, but if covering doesn't stick, use more heat rather than pressure.
- By saving high heat, you have less scratches and can remove wrinkles
- Lightly smooth from center out. When everything is attached especially edges, lightly shrink at higher heat.
- After trying other ways, I try to keep all possible seams on edges, making them unlikely to peel, and unevenness in the trim hard to see.
- By resealing edges I've never had "fuel creep". Check covering after first few flights, clean any lifts with alcohol, and reseal.

A COUPLE QUESTIONS

- How do you easily separate monocoat from it's backing?
 - How do you prevent monocoat from "sagging" with age? pml
 - What kind of control system has reliability and longevity?
- Leta Leonard - P.O. Box 177 - Lila, MI. 49920

FLIGHT SCHOOL

by: Jim Labarge



Page 13

80N Back Again, This time we will discuss flying and flying field safety.....

One thing that our models are if nothing else is that to the uninitiated spectator, interesting and attractive. I have seen cases where spectators have actually walked into the flying circle while models were in the air. I have also seen probing fingers and clumsy feet destroy many hours of work by punching a hole in a wing or stepping on a model. We as modelers know how to handle our models and most know enough not to accidentally damage a model.

Flying fields are hard enough to get and keep and all it takes is one adult or child to get hurt and there goes another field. If a model gets destroyed, well there goes a lot of work and an afternoons flying.

If you are flying by yourself take the time to talk to the spectators and inform them so that there won't be any incidents. If you are flying with a club on a club held field or Parks and Recreation owned field make sure that the rules are posted and that fliers and spectators follow them. I know it may seem dumb to have to remind a flier to follow the safe flying rules, but I think all of us have seen an experienced flyer pull a dumbo. Since this column is for beginners, if you are flying with an experienced bunch be careful not to pick up bad habits. Most experienced flyers have a sixth sense about where an aircraft is when its airborne, newcomers don't.

Beginners need to be aware that we are very liable when flying, any accident that happens can and will turn into a lawsuit, the only answer is to make sure there isn't an accident. If you are a member of AMA you have some measure of protection with the insurance, if not an AMA member check with your home owners insurance to see if you are covered or a rider can be purchased to cover flying activities.

Remember, safety is everyone's business, just because you are a beginner doesn't mean that being unsafe is excusable, experienced fliers should know better. If you don't fly and build safely you won't be around long enough to be an "old timer"

Next time, exploring events and types of models.....Fly Safely!!!!

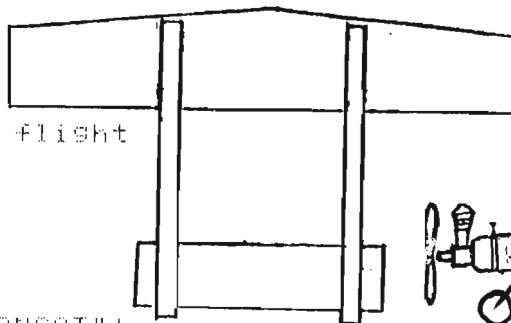


GREAT DIVIDE!
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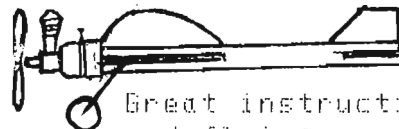
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Fine flying sportster!
Incredibly rugged!
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1988 CONTROL LINE CONTEST SCHEDULE

Page 14

MAY 15, 1988

UGMC Spring Opener
Vancouver, BC, Richmond Field
33 1/3 - Racing, 15 Combat, Carrier.

MAY 28-29, 1988

NORTHWEST CONTROL LINE REGIONALS
Eugene, OR, Mahlon Sweet Airport
Most AMA events to be flown on
a brand new flying site. Details to
be announced.

JUNE 12, 1988

CLAMBASH 1988
Astoria, OR.
Tentative: Site to be announced.
CD: Dave Green: (503) 325-7005

JUNE 12, 1988

UGMC Sport Race #3
Vancouver, BC, Richmond Field

JUNE 25-26, 1988

Bladder Grabber
Fast Combat at its best.
Details when available.

JUNE 25-26, 1988

UGMC C/L speed Championships.
Vancouver, BC, Richmond Field

JULY 9, 1988

Stuntathon 1988
Kent, WA, Boeing Space Center
Precision Aerobatics, Old Time
Stunt, Jr. Novice stunt.
CD: Bob Emmett, 432-5808

JULY 23-31, 1988

AMA Nationals

August 20-21

Modelaires Summer Contest
Stunt, Combat, events to be
announced.
CD: Pete Bergstrom: 847-2055

SEPTEMBER 3-4, 1988

Vancouver Internats
Most control line events
Vancouver BC., Richmond Field

SEPTEMBER 17-18, 1988

RAIDER ROUND UP '88"
Kent, WA, Boeing Space Center
Fast combat, Slow combat, 1/2 A combat,
FoxDoo combat, NI-SR, NI-SS, Sport
Goodyear, Mouse I, Mouse II, Balloon Bust,
Carrier-Profile, Class I, Class II, Old Time Stunt,
Precision Aerobatics, Speed, Profile Scale,
Sport Scale.

OCTOBER 2, 1988

UGMC Sport Race Finale
Vancouver, BC, Richmond Field

As contest sites, events, and CD's
made known, we'll include the
information in the schedule. If
you have any clues as to what
is happening out there, don't be
bashful, share it with the rest of us.

1988 CONTROL LINE ACTIVITY AT RICHMOND FIELD

- | | |
|-----------------|--|
| (A) MAY 15 | SPRING OPENER, 33 1/3, RACING, 15 COMBAT, CARRIER. |
| (AA) JUNE 12 | SPORT RACING SERIES #3 for Northwest & Junior Sport Race. |
| (AA) JUNE 25/26 | NORTHWEST C/L SPEED CHAMPIONSHIPS- All classes of C/L speed. |
| (AAA) SEPT 3/4 | 44th INTERNATIONALS- All categories of Control Line flying. |
| (AA) OCT 2 | SPORT RACING GRAND FINALE- \$300 in merchandise. |

THE FLYING FLEA MARKET

BUY, SELL, TRADE

Page 15

FOR SALE: 2 ea OS Max 25F-ABC, new in box \$65 ea, 1 OS Max 40FSR-ABC new in box \$75, 1 OS Max 40 VR-P new in box, with OS mini pipe \$120, 1 OS Max 40 VR-P, special head, mod exhaust adapter with K&B mini-pipe, bench run, strong \$125
1 ST X-15, excess weight machined off, special head insert, bench run only, good runner \$50
3- ST 36, new in box \$50 each,
2- K&B 40RC #4011 new in box \$45 ea.
1- Tower digital LED tach, VGC \$15
Dick Tyndall, 348 Argyll Circle,
Highland Springs, VA 23075

ENGINE WANTED: Como .40, non-sch., new, and/or new parts. SUPER TIGRE PARTS WANTED: For G-21.40: full circle crankshaft (AA40-1N); wrist pin (AA40-5). For G-15 engine: gasket set. ENGINES FOR SALE OR TRADE: OS Max 30S Stunt, NIB, two at \$45 ea. Testors/McCoy Series 21 (black hd.), .35 Stunt, NIB, \$35; .40, NIB, \$35. Veco 19 BB Stunt, NIB, \$40. McCoy .60 red hd., rear intake, exc. cond., hd. fins shaved, ex. butterfly added for carrier, \$75. Rossi R60, rear intake, set up for carrier by Bill Johnson w/ fuel meter and ex. slide, exc., \$85. \$2.00 postage per engine, M.O. please. Gabe Manfredi, 601 N.W. Selvitz Rd., Port St. Lucie, FL 34983. Ph. 305-878-9220.

FOR SALE:

2 Each OS Max .45 FSR Ringed R/C NIB---\$80.00 each.
2 Each OS Max 40 FSR ABC R/C one NIB, 1 Bench run-\$75.00 ea.
1 OS Max 45 SF ABC Stunt control-line engine NIB-\$90.00
Please add \$2.50 per engine for shipping and handling.
Gerald Schamp-980 Calapeoia SW-Albany, OR. 97321
PHONE 1-503-928-0430 If no answer, see trying.

WANTED: Old Controline kits (preferably combat) and build, new and old UC planes, any size
Chip Giordano, Day 201-286-1200
Eves 201-240-4451

DAWG SALE-- Help me clean out the nooks and crannies of my workshop. The following items are flyable airplanes and running engines, all used, ranging in quality from beater to better. I will make delivery or bring them for viewing to Drizzle Circuit contests.

4- Sam-Too combat planes, much used, usable for FAI practice, drilled for Fox 15BB engines. \$5 each or \$15 for lot. Not competition quality

1- much used Goodyear racer, Midget Mustang, drilled for Cox. Needs minor repair \$20

1- Ringmaster, used in old NWSR and early NWSS, drilled for K&B 35 or Fox 36. \$15

1- Akromaster, complete with Fox 15, excellent flier does full pattern \$25

1- Sig Mustang Stunter, beautiful but flies like a brick, excellent adult trainer. With Fox 35, \$50

3- Wings cannibalized from old profiles, \$10 for the lot

1- Batch of 1/4 A planes, suitable for kids to play with, make offer.

1- Giesecke Nobler, has tank problems, ugly as sin, flies OK, Fox 35 stunt engine, \$50

1- Ringmaster, used in NWSR and NWSS Good shape, good flier, \$20 or with new style McCoy 35 \$35

2- SuperTigre G21 engines, reworked for fast combat, with pressure regulators. \$20 each

~~2- stock SuperTigre G21 .35 engines used in slow combat, \$30 for pair~~

1- McCoy 35 (new style) \$15

1- Fox 36 plain bearing \$25

John Thompson, 1505 Ash Avenue,
Cottage Grove, OR 97424
(503) 942-7324

You wouldn't believe how much there is to be learned about the heart of our control system, friends. This month we're talking

BELLCRANKS

I noticed in the literature that the big kids were alluding to problems with throttling high nitro fuels. I found out why the hard way as I worked toward moving up in that area this last season. I was trying to fly the low speed portion one calm afternoon with, I believe, 40% nitro, and the airplane seemed to be on the verge of seesawing out there. The plane's path would go a bit too high and then a bit too low, and I finally pranged it, wondering why. Later I tried 60% and the seesaw was so huge that I bagged it and landed after one lap. Why? No matter how small a trigger movement I made, it was too much. This, then was the high nitro throttling problem they were talking about.

Lets talk "quantum talk" a moment. "A quantum leap forward" is a mis-stated term from physics. People mean to say, "A huge leap forward". Actually, a quantum step is "the smallest change that can be made". Smallest; not biggest. They should be saying, "An order of magnitude" meaning another power of ten times it. We need to focus on the smallest power change we can effect while flying low speed. This would correctly be termed "a quantum power change". Again, it is the tiniest one we can make.

To keep the plane within the low speed flight envelope necessitates very small trigger movements on our control handle, if it is a Profile machine. My Class II ship takes half the throttle range because of its higher wing loading. Profile ships take very tiny ones. Given too much added power, the Profile machine will zoom climb to an undesirable altitude. We come, then, to the "quantum trigger movement".

This smallest movement produces a quantum change in fuel flow to the engine. The quantum of energy that is produced from this change will be determined to a large extent by the percent of nitro in the fuel.

Below, say, 35%, this energy quantum is smaller than what we need to keep the plane in its performance envelope. This is good. It gives us latitude with the trigger. We can give it a little more movement than the quantum movement and things will be just fine with the plane. However, starting at 40%, the energy in a quantum fuel flow rate change is as big as needed with only the tiniest throttle movement or ... even too big. The plane may get into a seesaw behavior. Above 40% the energy in the smallest fuel flow change is too much for the plane.

What we need is a far more vernier nature to our throttle system at the low speed end. I have studied the bellcrank more than the designer, and more than any recent manufacturer of it. It turns out that the design, for all its good points, is vernier at the high speed end, the way I hook it up. (Bolt on the engine and bellcrank without modifications and forward is high speed.) Here, this behavior is virtually meaningless. The engine does not respond to throttle decrease until the barrel is below 45% range. So, who cares how finely we can move the trigger up there? Vernier action was likely never a consideration in the design and simply resulted that way.

Because of the size of this topic and the amount of space that can go to one columnist at any one time I won't be able to get into the specific remedy I have invented this time. I can just clearly define the problem. I will have room left only to point out a design flaw with the

newest version of the bellcrank that you all need very much to understand. Hardware techniques will come next time. page 17

Let me give Mr. "J. Roberts", the designer, all the credit he is due for this wonderful invention, first. He has made more enjoyment possible for more modelers by giving us the throttle bellcrank than the rest of us put together.

In the functioning of a throttle system there must be a balance. You see, you have two lines pulling on the elevator portion and this must somehow be counterbalanced by only one line on the throttle portion of the system. This ingenious design results in your being able to move the trigger to any position and leave it there. It will remain by itself. This is the "equal tension" concept. All three lines have equal tension in them.

There must be a lever in the system tying the elevator part to the throttle part to even things out. Two lines pulling on the elevator can be balanced by one line on the throttle part only if the lever system between them has a two-to-one mechanical advantage in favor of the single line on the throttle part. Now, that was a long sentence. You might want to run that by again.

In the newer design of the bellcrank there was supposed to be more throttle rod travel capability to actuate the modern carburetors. If you put your hands on the bellcrank parts and move them manually, everything seems fine. The system functions full range. If, however, you hook up a handle to the system, it won't go full range. I have re-measured my leadouts, handle, and lines umpteen times to no avail. The system works in your hand but not with a handle (yes, it's the right kind of handle; gimme a break.)

The reason is that as the throttle portion moves toward the pilot it gets out of the two-to-one mechanical advantage range. This occurs at about the 2/3 to 3/4 point in its travel toward the pilot. The arm swings so far in its arc that the advantage gets below the needed amount. The system will not go past that point by itself. You have to overpower it and hold it in place. This is bad. The only remedy for it is to tie your center leadout 1/4" shorter than it is supposed to be. That would properly be 3&13/16" longer than the elevator leadouts with the center one pulled tight and the throttle hooked up to the carb at the forward end. Now, taking 1/4" off this leaves us at 3&9/16". Or you can just put a smaller line connector on one-end-only of your throttle line if the model is already finished.

I met Mr. "LR" at the Nats and we went over this. He thought perhaps I had gotten an earlier version that had the slot in the back of the unit in the wrong place. A new one bought from him there was identical to the one in my plane, however. It seems the slot still is in the wrong place which allows the system to go under the needed 2:1 mechanical advantage.

I also shared with him the trick of lining up the slot with the low speed position of the line slider (instead of the more usual high speed alignment) which I got from Bill Melton. That item is the cutting edge of bellcrank installation knowledge today. It eliminates adverse Yaw-Throttle Coupling that occurs in some models.

At the end of the contest he thanked me for the input by saying, "You've given me something to think about."

Another time I will share details of the Humphries "High Nitro Verner-At-Low-End Throttle System". But before that I want to slip in a piece on my Nats experiences.

Orin Humphries, N.6803 Forker Rd., Spokane, WA 99207 (509)924-2080

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■ AND All the usual amenities...

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CONTEST DIRECTOR:

Mike Hazel

1073 Windemere Dr. NW.

Salem, OR 97304

FOR INFORMATION

(503) 364-8593

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AEROBATICS _ 4 PAMPA classes and Old Time Stunt

BALLOON BUST

COMBAT _ AMA, FAI, Slow, 1/2-A

NAVY CARRIER _ Profile, Class I and II

RACING _ Mouse I, II, Rat, Slow Rat, Goodyear, NW Sport
NW Super Sport

SCALE _ Precision and Profile

SPEED _ 1/2-A, A, B, D, FAI, Jet, Formula 40

JUNIOR EVENTS _ NWSR, Mouse I, Balloon Bust

SCHEDULE OF EVENTS

SATURDAY

Speed (All classes)	9 a.m. - 5 p.m.
Navy Carrier (All classes)	9 a.m. - 5 p.m.
Mouse I (S-0)	9:30 a.m.
Old-Time Stunt	10 a.m.
Mouse I (J)	11 a.m.
Mouse II	11:30 a.m.
Slow Combat	Noon
Goodyear	1 p.m.
FAI Combat	2 p.m.
Profile Scale	2 p.m.
Northwest Sport Race (J)	2:30 p.m.
Northwest Sport Race (S-0)	3 p.m.

SUNDAY

Speed (All classes)	9 a.m. - 5 p.m.
Precision Aerobatics	9 a.m. - 5 p.m.
1/2-A Combat	10 a.m.
NW Super Sport Race	10 a.m.
Precision Scale	11 a.m.
AMA Combat	Noon
Slow Rat Race	Noon
Balloon Bust	10 a.m. - 5 p.m.
Rat Race	2 p.m.

SCHEDULE NOTES

- * Registration is open from 8 a.m. to noon both days.
- * Officials will hold to event starting times as much as possible.
- * Precision Aerobatics and Old-Time Stunt entrants check at registration for meeting info.
- * Precision Scale entries should be in judging area by 10 a.m.
- * Awards will be presented on Sunday immediately after 5 p.m.

RULES INFORMATION

- * AMA events are per 1988-89 rule book. **Know the rules!**
- * *NW Sport Race*: Stock Fox .35 stunt, stock profile kits or accurate copy of kits, 1-wheel (2") landing gear OK, no shutoff, no fastfill, suction feed, no hot glove. *NW Super Sport Race*: Plain-bearing single bypass .36 maximum, AMA Slow Rat plane specs with outboard suction tank. Lines for both events are .018x60 braided. Write contest director for full rules.
- * *Profile Scale* - Profile fuselage only, must represent actual plane, one entry per individual, documentation required on obscure aircraft. Write contest director for full rules.
- * *COMBAT* - All events except 1/2-A flown double-elimination.
- * All events flown on asphalt except Combat, Balloon Bust.
- * **Safety things** required in all events.

OTHER INFORMATION

- * AMA or MAAC membership required for all participants, including mechanics. AMA membership available at registration.
- * Only participants and officials allowed in flying areas. All others must stay outside roped-off or restricted areas.
- * Absolutely no alcoholic beverages on flying field during meet hours.
- * *Awards* - Trophies and merchandise through third place in each event and age grouping, and first- through third-place grand championship trophies. **Approximate value of awards: \$2,000.**
- * Overnight camping is available on or near site. Rest rooms, restaurant, etc., are nearby. A concession truck and hobby shop truck will be on site most of each day.
- * Contestants are invited to after-flying pizza party Saturday night. Check at registration for details.

FOR INFORMATION, CONTACT: Mike Hazel, contest director
1073 Windemere Drive NW
Salem, OR 97304
(503) 364-8593

AIRMAIL



COMMENTS, NEWS , and VIEWS from FL READERS

Page 18

Dear Pat. By receipt of issue #88 I see postal service is available on the edge of civilization... I don't know whether I ought to feel guilty about enjoying Orin Humphries so much because of the tragic scene he portrayed or go and read it again to see if I missed any humor the first go around, but knowing the kind of guy I am, I suspect it won't be the former. Sorry for the tough times Orin. Thanks for the chuckles your reporting provided.

Best wishes with the editorship job Pat! Sincerely,
Larry Miles - 2112 Scott Ave. - Independence MO. 64052

Dear Pat, I'm your contact with the once powerful DAYTON BUZZIN' BUZZARDS - for what that's worth. (It's worth plenty! Pml) About 6 regular fliers, but we have 3 contests scheduled again this year. Had a really decent turnout last Sept. for the Speed Bash and the FAI Speed Trials.

Lotsof luck. I've been on your end of the publishers stick and it can get to be a hassle.
Eric Williams - P.O. Box 451 - Vandalia, Ohio 45377

Pat, If you should print anything on the 1987-88 Drizzle Circuit me Pit Partner, Blake Janson (page 20) has to be included. As most races are decided in the pits he did a great job in both NWGR & NWSS. I want to thank Dave Green, Dick Salter and all the other Drizzle Circuit racers who shared their knowledge with me. Dave was very helpful - My long distance phone bills to Astoria indicate the amount of help Dave gave me.



Check enclosed for renewal - Hope Flying Lines continues. Thanks,
D.W. Drake - 3200 S.E. Felton - Troutdale, OR. 97060

Pat,

I was very upset to learn that F.L. would not continue. It came to me with about the same impact as the loss of a friend.... My dependence on F.L. has evolved to a state of NEED. I am truly delighted that you have taken the responsibility. Also, I'd like to thank John and Mike for their efforts through the years with the newsletter. I've been on board since #5. Pat, I am sure that your energy and dedication to control line and your eloquent writing style will benefit all of the fliers within the range of your pen.

Please find the enclosed check for my subscription.

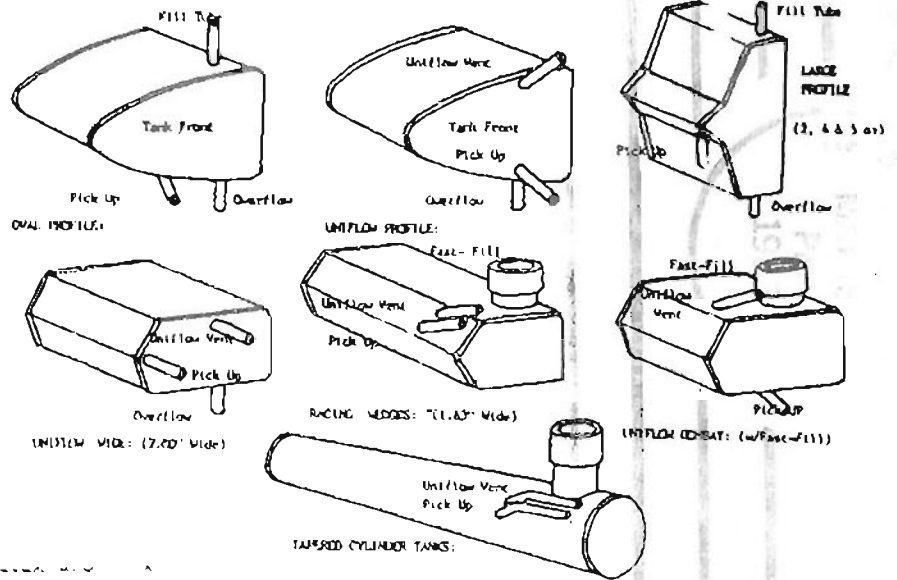
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Rory Tennison
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 "C" & "PAC" Blends are ALL Castor versions of the above.
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