FLYING LINES

NEWS OF NORTHWEST CONTROL LINE MODEL AVIATION

1073 WINDEMERE DRIVE NW
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COCKPIT CHATTER

NOTES FROM THE EDITORS' DESK

Well, here we are nearly at the end of another summer season. Whether you are a sport flier or competitor in the NW, you will soon be rained upon. Hmmmm, not exactly the inspirational opening line that I hoped that would be. We have had a lot of great events roll by this year: The Regionals as usual, the Lincoln Nats, and of course the Bladder Grabber. Throw in three or four local meets and yes, it's been a busy one.

We have two more biggies that will cap off the season. The first one over Labor Day weekend is the 43rd VGMC Internats. A two day affair on a nice site on a holiday weekend. What could be better? Let's see some more North Washington people up there, it's just a short drive for you folks. (contest flyer in this issue).

After going to that meet, relax the next weekend, and then the following weekend hit the Raider Roundup in Kent, Washington. The contest director for that one is Dan Cronyn. Give him a ring at (206) 782-5552. Speed fliers please note that multiple entries in record ratio is OK.

With that out of the way, then it is time to look forward to the winter season. That usually means building time for most folks, but for a few diehards it will be time for the annual Drizzle Circuit sport race tourney. It is not too early to start planning for this. First off, we will need a coordinator. The coordinator's job is to help line up the contest directors and get the sanctions taken care of, along with handling the operations of season points and individual contest scoring.

Every year there are some ideas regarding changes, and this year is no different. Ye olde editor has a proposal. First a bit of historical digression. During the first year when we had only one sport race class, four heats were run off prior to final. This seemed a bit much so we then went to three heats. When we went to two different classes, we then evolved to having two rounds (earlier I said heats, I meant rounds) and a final for each class. Having been a DC participant for most of the seasons I feel that the two round prelims lost a lot of the flavor that we had in the early days. It was always nice to know that if you blew a heat, that you still had a good chance of making the final by finishing strong in subsequent rounds. Now, except for rare instances, you must finish high in each round to make the final. Yea, I know its the same for everybody, but I still like the idea of the dark horse coming from behind.

Here's what I propose: Let's go to three rounds of prelims for each class, and to buy the time to do it, eliminate the secondary event. The original intent of the secondary event was to bring in some incremental entries and perhaps push some of the other racing events. That's all fine and well, but 99% of the secondary event entries were from the "circuit riders" anyway. If we started the first heat of the first round by 10 AM sharp, I believe we would have time in the day for three rounds. What do you think?

John Hall wrote and threw out the idea of specifying a single prop to use for sport race, such as a 9x6 in one of the popular brands. He cites the high cost of FG racing props and putting in too much high-tech into a sport event as his rationale.

So far we have had zip-o response on merchandise donations for a Flying Lines fund raising raffle. C'mon you guys! You really don't want to see the sub rates go up, do you? Please refer back to the last issue regarding this discussion.

Read on.....

ROUND & ROUND

By: John Thompson

IF THIS IS LINCOLN, IT MUST BE -- WINDY!
Ramblings from the 1987 NATS

A fairly typical 1987 National Model Airplane Championships moment: In a moment of quiet between rat race heats, a 40-mph gust sends pop cans, paper towels, hats and scoresheets clattering across the vast expanse of concrete, eerily devoid of the dozens of stunt planes that should be practicing. Another moment, oft repeated: A snarling fast combat plane rockets out of the launch, comes around into a headwind at its usual 100 mph, and blows over the top of the circle into a crash. Welcome to Lincoln, Neb., 1987.

Lincoln is a beautiful sight -- and site -- for a Nats. A friendly midwest city of universally well-kept homes and lawns on beautiful tree-lined streets. It also has been noted in the past for pleasant Nats weather. The flying areas themselves are excellent. This year the weather was humid but not unbearably hot, and the few sprinkles of rain were no problem. But, oh, the wind.

There was wind indoors as well, if you spent time to fly your flag at the gatherings, impromptu as well as planned, of speed fliers, MACA, PAMPA, carrier people, etc. And they say fishermen are liars.

A Nats is more than a model contest; it is a convention, an event, a happening. The official results and reports will be given elsewhere in detail. Here are a few observations by one roving competitor/spectator, some more Nats moments, good and bad.

NORTHWEST GLORY: While the wind brought in bad luck for many in the Precision Aerobatics world, it was no big problem for Paul Walker. Walker is temporarily (we hope) a Californian, but will always be claimed by the Northwest as one of our own. Walker breezed, so to speak to his second National Championship. Meanwhile, the quiet man with the noisy airplanes, Jerry Thomas of Puyallup, Wash., zoomed to a 201-mph flight in jet speed. It was good for only third place at the Nats but made Jerry the Northwest's first 200-mph club member.

SPEAKING OF JETS -- With 205 mph on the boards as the speed to beat in jet, the Texas jet of Charlie Davis sat silent in the pits. Something about weather conditions, time of day, magic incantations. They had a chance to beat that time, but it had to be done at the right moment. The moment came at 4:30 p.m., a half hour before the cutoff. The flight was another 205-mph-plus flight, fractions of a second behind first place.

MORE JETS -- With retirement impending, Thomas is looking toward manufacturing jet engines and parts...the jet speed activity could soon be booming, so to speak.

RATS NICE -- Class of the racing circles was the all-fiberglass rat racers of the F.A.S.T. Team (Fogg and Shahan Team) of California. The see-through planes were the result of extensive development, and running in the 150s. Racing was typical Nats, low entry and high speed. Still suffering from the lack of an organization or newsletter and an unwillingness to change to adjust to modern times, racing on the national scale clings to life by a thread.

LONG-DISTANCE HEADACHE -- Orin Humphries, the Northwest's definitely class act in the carrier circles, had some kind of mechanical or scheduling woes in every one of the three carrier classes. He was trying to get a score on the scale boards when we left. He remained his usual good-natured self and spent much of his idle time soaking up information for future use, but the three scratches obviously hurt.

GREAT BALLS OF FIRE -- The 1987 Nats will probably be remembered best by AMA officials and combat fliers as the Year of the Fireball. A slow combat midair collision jerked the handle out of Texan Mike Heath's hand so hard it broke the handle. The plane, lines, handle and all, continued two blocks down the road toward AMA headquarters before the lines wrapped a power line. The ensuing fireball blew four transformers and wiped out power to airport businesses for three hours. It also got AMA imtrouble with the airport, its insurance company and the Nats neighbors. Before NATS end, a proposal was moving through the AMA emergency rules process to require a safety thong to be used in all combat events. See FL combat column for details.

PLAINTIVE PLEAS -- It was a cruel twist of fate that the only two clearly bad calls in the combat week were ones that eliminated West Coast fliers. Bob Carver got sympathy but no justice when he explained eloquently how it's impossible to lose on air time when you get up first and the match ends in a mid-air collision with no score. He lost on air time. Mike Petri was offering optometric aid to the judges and circle marshal who missed the four-foot cut that would have meant the difference between losing and winning. Aside from those incidents, combat went pretty well considering the hideous wind conditions.

PERSONAL MOMENTS -- Residing on combat row of the Motel 6, it was interesting to drop into the Minnesota fliers den and watch video tapes of the day's matches. Pete Plunkett and Andre Leger proved to be fine cinematographers. Listening to speed fliers trade lies and harrass a poor steak house waitress was an eye-opener. Never could get a clear view of the reasons some want a new speed event (.21 sport speed) that looks just as tough to an outsider as any other...with a half dozen events already, there's plenty of places to start. And then they started talking about sport <u>jet</u> speed! Touristing around Lincoln was worth the trip, and a morning was so spent. The combat fliers' heaven: Mike Petri, Bob Carver, Howard Rush and Norm McFadden sitting under a shade tree, with a cooler of pop and a bag of pretzels, assembling gear and making the occasional test flight. Renewing acquaintances with combat fliers I tangled with in '79 at Lincoln. Watching the Olsen family, dad Mike and, what, three kids? flying combat and racing was a heartwarming sight.

EGO BUILDERS -- Seeing team racers come down in a pileup in the national championship finals, and seeing Formula 1 RC pylon racers splatter should give a boost to the up-and-coming hackers. It happens to everyone, even the big names.

AND -- More of everything happens at a Nats. If you haven't been to one, start making plans. It will provide lifetime memories.

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

FLIGHT SCHOOL

by: Jim Laberge

Hello, again from Flight School. Hopefully since we last met you've been able to get in some practice flying; and if you are from cold country some building time under your wing.

Since we last met a few changes have happened in the ole instructors life. Mike Hazel has had a devil of a time trying to keep up with me. My family and I are back in the USA and are settled in with new jobs, homes, schools, etc. in Yuma, Arizona, which for those of you who aren't familiar with AZ and the southwest, is about 3 hours east of San Diego on Interstate 8 on the California/Arizona border. Enough for now, as soon as I get unpacked and my workshop setup we will get some building in.

Back to flying, Now even though you may not be real confident yet, but hopefully you can take off fly, level, and land, all in one piece. Up to this point we have been flying mainly the cheap, but fun 1/2A size models. Hopefully your urge to fly is increasing and maybe you want to see what others are flying. If you are from an area that has Controlline activity try to meet them and see what they fly.

If they're like most modelers they will invite you to fly with them, and it is definitely better to fly with a group than by yourself. If you have a problem that is stumping you chances are others have had the same problem and they can help you solve it. All of this brings us to the point of this session.

If there is a club in your area join it, if not maybe you and some flying buddies can start one. City or school officials have a tendency to listen much more to a group than to an individual, and let's face it flying sites aren't always the easiest to find. Another thing that is important is to make sure you have liability insurance in case something happens while you are flying. Some homeowners' insurance policies will cover model flying, others won't. One sure bet as far as making sure you are covered is to join the Academy of Model Aeronautics, otherwise known as AMA. Just about every club or contest will require you to be a member so it is worthwhile, besides being insured is a good idea.

When you are looking for fellow flyers a good place to start is the local hobby shop. Most clubs have a good relationship with the hobby shop and most will post meeting times, flying site information, etc. at the shop. In many cases the owner is a member of the local club also. One caution though about clubs, check to see if the club is R/C only. There are many clubs today that are R/C only and many of them do not want Controlliners around or on the flying field. This is unfortunate but there is a good bit of "looking down the nose" practiced by our fellow model flyers in R/C.

Some of the benefits you will get from being a member of a U/C club are others with your interest, someone to hangar fly with(extremely important), flying field, assistance to beginners, and a chance to test your flying and building skills against others.

I can tell you from experience that goes back longer than I care to admit that being a member of a Controlline club will benefit you in a lot of ways and your flying and building skills will improve.

Till next time keep your lines tight.....

Next: Safety and liability for builders and flyers.

1987 NORTHWEST C/L SPEED CHAMPIONSHIPS June 27/28 Richmond, B.C. H.Hajdik

Hmmmmm, hot California type weather up here for two days? Yep in fact we have had over a week of scorching temperatures in the greater Vancouver area, as has the whole Northwest. The good weather and good entry, 18 guys in total made for a good show. To start with we ran all the events over both days so everbody had lots of time to dial in and test, and so a lot of guys did.GREG and ROY BEERS get the iron man award for the most flights on a given weekend, these guys were in the circles all day with four different events. Although they did'nt fare all that well they are improving nicely. Two Northwest records hit over this weekend, they were ½A and JET. BRUCE DUNCAN and CHRIS SACKETT teamed up with a brand new ship to turn a conservative 98.86 MPH for the new mark and veteran JERRY THOMAS cranked a smooth 195.57 MPH in Jet to wipe out SACKETTS five year old 194.73 MPH standard.

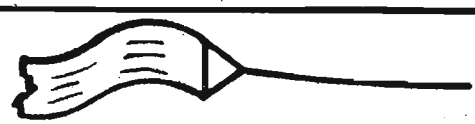
CHUCK SCHUETTE flew a couple of real fast practise hops in FAI but could not put it together for any official times. CHUCK re-entered but opted out on Sunday due to the high wind. CHRIS SACKETT put in a couple of conservative times in FAI speed to be sure of a team trials time at 158 MPH then came back with his good equipment in round 3 for a real go.CHRIS put up one flight with his new ship with SCHUETTE getting him at 6.53 for 5 laps! and at 13.1 for ten just as the model kissed the ground due to bad handling in the high wind, the speed on that flight was 171 MPH! This new combination for Chris shows great potential, but model was put away ater that due to some minor damage. The F-40 boys were all there but did not go as fast as we we have thought probably due to the unusually hig heat for this time of year. However DICK PETERSON did manage a 148 mph run for 2nd overall in the R/R cash bash. Here are the full results;

1st	JERRY THOMAS,	Puyallup, Washington	JET	195.57 MPH	91.84%	$45.00
2nd	DICK PETERSON,	Seattle, Washington	F-40	148.52 MPH	89.95%	$30.00
3rd	CHRIS SACKETT,	Burnaby, B.C.	FAI	157.86 MPH	89.22%	$20.00
4th	MIKE HAZEL	Salem, Oregon	F-40	139.37 MPH	84.24%	$10.00
5th	GREG BEERS	Vancouver, Washington	D	175.20 MPH	82.47%	$ 5.00
6th	MIKE HAZEL	Salem Oregon	JET	172.02 MPH	80.78%	
7th	ROY BEERS	Vancouver,Washington	F-40	124.78 MPH	75.42%	
8th	BRUCE DUNCAN	Richmond,B.C.	½A	98.86 MPH	74.83%	
9th	MARTY HIGGS	Vancouver,BC	F-40	123.24 MPH	74.48%	
10th	GREG BEERS	Vancouver,Washington	B	140.87 MPH	65.21%	
11th	MIKE SLESSOR	Maple Ridge, BC	½A	65.14 MPH	60.31%	
	CHUCK SCHUETTE	Vancouver,Washington	FAI	Att.		
	RON SALO	Burnaby, BC	A	Att.		
	ROY BEERS	Vancouver,Wash	A	Att.		

CLASS WINNERS; ½A -BRUCE DUNCAN , CLASS A- ROY BEERS , CLASS B- GREG BEERS

CLASS D- GREG BEERS, JET- JERRY THOMAS, F-40 -DICK PETERSON, FAI-CHRIS SACKETT

CUTS & KILLS



COMBAT NOTES

by: JOHN THOMPSON

STREAMER MADNESS -- A SUMMER ON THE COMBAT CIRCLE

It's been a year of note in combat, particularly in the Northwest.

Any time a Northwest contest draws out 63 entries, as the Bladder Grabber did, it's a year of note.

It also is the year of the debut of the Fox Combat Special MkVI and the Year of the Fireball.

Fireball? Yep, and we're not talking about glow plugs.

It happened in Lincoln, Neb., and though it may have been far away from where you were, it will affect your combat flying in the future.

The fireball was the result of a slow combat plane's free-flight journey into the power lines at the AMA Nats, the result of the handle having been jerked from the hand of the pilot during a midair collision.

The contact with the power lines created not one but several fireballs as four transformers blew and the AMA's insurance carrier blew his stack as well. AMA found itself facing the cost of power lines, transformers, and lost time by several airport-related businesses.

As AMA grumbled about combat safety problems, the Miniature Aircraft Combat Association got going on the issue with a one-flip start and was up in the air first. MACA, in its annual Nats meeting, voted unanimously to make an emergency safety rules proposal to require safety thongs to be used in all combat events.

Your combat columnist, as the Dist. XI Control Line Contest Board member and MACA district vice president, was delegated to carry the proposal through. It was accepted by AMA's Bob Underwood and hand-carried to AMA headquarters. It next goes to the contest board, and if approved, should be squeezed into the upcoming rule book. It will be effective immediately upon approval.

So, contest directors should be on the lookout for the new rule, which could affect fall or winter contests.

The next safety issue to be mulled by MACA, and possibly presented through the regular rules cycle, is the matter of wiring engines to the bellcrank. There seemed to be considerable support for that practice. Its value was demonstrated at the Nats when an FAI combat plane shed its engine but kept it on a leash, so to speak, and no safety hazard was presented.

By now you know that the Bladder Grabber, which ran off 200 matches in two days, was perhaps the best fast combat contest ever. Chuck Rudner won for the second time in a brilliant final-rounds triumph over Mike Petri. Rudner beat Petri, who entered the finals 10-0, three times for the victory. Third place went to the Northwest's own Dick Salter, fourth to Ed Brzycs, fifth to John Thompson and sixth to Dick Stubblefield.

Event Director Jim McFadden and a superior crew of officials from the Northwest CL scene and the Boeing free-flight club were outstanding throughout the entire event.

Norm McFadden, who used up nine planes, won the first and possibly annual Bellcrank Award from the Dreaded Canadian Contingent.

The Fox MkVI entered the combat scene fraught with problems, but Duke and the people at the Fox factor seem to have them ironed out. As reported in FL before, if you have one of the original versions with the rinsed piston, send it to the factory for new parts, free of charge.

We haven't see too many of them in use at contests yet, but did see some testing. Bob Carver's box stock MkVI appeared to have excellent horsepower in test flights at Lincoln. The general opinion of fliers who have worked with the new motor is that it is pretty close to being 'the right stuff.'

Other power sources this year seem to be pretty much standard: Predominantly Fox MkIII and MkIV, with quite a few ABC piston/liner sets. As usual, a few B&M cranks are still in use and pressure regulators are gaining in popularity with Dave Green and Dick Salter manufacturing them for sale.

Also seen in about the usual frequency are the Hoffelt .36 and the TWA, but their cost and exotic nature has kept them from sweeping the field, even though they are strong motors. We have yet to see the Cipolla used to good advantage but the potential appears to be there and the price is right.

Airplane-wise, there also are few new innovations. The tapered foamy continues to be the dominant style in its myriad varieties. It has been interesting to note that the general overall quality of airplane was considerably higher at the Bladder Grabber than at the Nats. There seemed to be quite a few obsolete designs, including quite a few balsa planes, at the Nats, while the BG was strictly high-tech.

We've also seen quite a bit of variety in props. In addition to the usual Top Flite pylon racing props, we saw Rev-up Pylon racing and standard props, fiberglass props, and some others.

On the down side, it has been a down year for combat in local contests and the non-fast events, possibly due to the success of such big contests as the Bladder Grabber, Money Nats and Nats. We're hoping combat fliers will come out and support their local contests as well. The Raider Roundup in September is a good opportunity.

This very moment also is a good opportunity for all combat fliers to do themselves a favor if they haven't already done so. Send your $10 dues to the Miniature Aircraft Combat Association and make sure you are represented in the global affairs of combat. You'll also receive the best combat newsletter available. Contact me at the address below if you have any questions about how to join up.

This column will attempt to answer questions of fliers and would gladly host guest articles on such specialties as slow and FAI combat. Let's hear from you.

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

from the "Hot Head",
VGMC newsletter.

WIND IN THE WIRES

by John Hannah

Have you ever wondered why stunt models have big barn-door wings, and those funny looking flaps? And why haven't they changed much in the last thirty years?

An awful lot of fog is generated in stunt circles. Most of it is supposition, some of it is at best hypothesis. Most of the so-called theory consists of garbled and recycled myth based on the utterings of winners who have but a hazy understanding of aerodynamics.

Let's examine some of those hazy notions by considering the two most obvious features of the mainstream stunt model: 1) large-area thick wings, and 2) trailing edge flaps.

Most stunt men will tell you that these features are an absolute necessity for aerobatic flight. Pin them down and they'll probably admit that it is the pattern requirements of square and triangular maneuvers for which these features are necessary. But is this so? Consider a combat model. Combat models can turn tighter than stunt models. In fact, most C/L fliers seem to hold the opinion that combat models fly better than stunt models in all respects but one. They are too fast for stunt. And here lies our first clue as to why stunt models have wings so large, and so thick. Such a wing prevents the model from flying too fast, and has the added advantage of providing extra wing area. So far this makes sense to us. The large wing however has another task to perform, but we'll get to that a little later. It is connected (pardon the pun) to the flap operation.

Now, we'll look at flaps. Orthodox "theory" asserts that they increase the lift of the wings at the critical moment when the model snaps through a square or triangular corner. But this isn't what happens at all. First, remember that for a model to fly through a 5' 7" radius square corner, it must have a wing loading of approximately 5 oz. per squ. ft. We all know that the mainstream stunter comes nowhere near this figure. So how are those square corners done. Easy: the elevators pitch the nose up sharply until the model is at 90^{o} to the direction of travel. The big wing acts as an air brake; the model "skids" or mushes a short distance, then the motor pull the model in the new direction. No mystery. Read the references appended to this article if you doubt this. Mathematically it is impossible for the mainstream model to fly around a 5' 7" radius. So this is the real reason for the enormous wing. The thick airfoil prevents the model from flying too fast; so this makes it easier to fly an accurate pattern; and the large area acts purely as an air brake for the square and triangular maneuvers. But, wait a minute -- what about the flaps? What do they do? Don't they increase the lift? Sure flaps can increase the lift generated from a wing, but on the mainstream stunter they serve another purpose: one allied to the large-area wing. When the flaps are depressed as the model flips to its new flight path, the flaps work as air dams to prevent the high pressure air from spilling off the trailing edge of the wing.

How do we know this? Clue one: At first the experts such as Palmer and Aldrich advocated flap deflections that were in keeping with the notion of increasing lift. Palmer suggested flaps should depress only 25% of the elevator travel. Aldrich in 1952 suggested 20^{o}, but by 1958 Aldrich and others advocated flap deflection of 45^{o}.

Further, many stunt experts have said that flaps are more effective on heavier models. It seems clear that the lighter model, having less mass and thus less inertia, would not "skid" so much in a square corner -- so the flap effect would be less noticeable than it would be on a heavier model. Conversely, if the models were "flying" through the square corner: that is, the airfoil is not stalled, no separation has occurred, then the opposite would be true. The lighter model, having less inertia than a heavy model, would more abruptly change direction than a heavier model; it would thus seem that the lighter model would be the one on which flaps are more effective.

So the questions are 1), Do flaps increase lift? Yes, when properly used. And 2), are flaps necessary on a stunt model? If the model is a mainstream type, yes.

Are there other ways of designing successful stunters? Sure. If you are interested, read the bibliography at the end of this article. Pay especial notice to Leroy Ducharme's "Lieutenant" stunter. This model has no flaps and only a 12% airfoil, yet is a winner. I've also listed Larry Scarzini's "Grey Ghost, another interesting flapless model that wins contests. But if you want a more recent example: Rich Porter's "Ridiculous" proves the points wonderfully well. One of the more interesting models was Vern Clements' "Snap." This model is interesting because it was the subject of an airfoil report in the January 1959 issue of M.A.N. What happend was that Vern and a friend built two Snaps. Vern's with a 10% airfoil, the friend's with an 18% airfoil. The results of the comparative tests are illuminating. I won't quote Bill Winter's comments in the Man at Work column in full, but what resulted from the tests was this: The 10% wing was only four m.p.h. faster than the 18% one! But it accelerated better, and would land smoother. But the most interesting remark was on maneuverability. Winter wrote: "Yet, there was no extreme differences here between the Snaps. There was a "slight tendency to believe" that the thicker winged job maneuvered more smoothly but none of the dedicated witnesses or flight crew could be sure." Note there is no direct mention that the thicker winged model turned tighter.

I was so intrigued by this that I wrote to Vern Clements to ask him about the matter. He replied with a very informative letter, adding nothing to what was reported by Winter on the Snap models.

Could this all have been different? That is, could stunt have been designed as an event that promoted the use of more realistic or reasonably proportioned models? If so, what happened?

Square maneuvers are what happened. Remeber this as you read on: The stunt pattern really hasn't changed in thirty years! In the early days the low tech of the models severely limited the range of maneuvers possible, but as the models improved, fliers were able to do consecutive loops, then figure of eights, and fly inverted. Pretty soon every-body could do the basic maneuvers at a contest. It was getting hard for judges to sort out the winners from the losers. What to do? Completely ignoring foresight, the rules makers opted for the obvious solution. Make the pattern more complicated. That'll sort them out! And it did, but only for a short while. Soon, with practice and newer models with improved technology, everybody could do the pattern well. Again the rules makers added maneuvers to the pattern. They added first square loops and eights, then triangular ones to sort out the fliers. But by the mid- to late-fifties it was apparent even to these myopic gentlemen that they were caught in revolving doors, so the pattern was left alone.

But the damage had been done. The pattern with its square and triangular maneuvers put so great a premium on the ability of a model to turn tightly that development in any other direction was ended. Stunt was fixed for the next thirty years!

It should have been obvious that it didn't matter whether or not a stunt pattern was simple or complex, sooner or later everybody interested in the sport would be able to do it well. So the complex pattern really doesn't do much more than perhaps to discourage some of the newcomers. A simpler pattern would serve our porposes every bit as well, but would have the clear advantage of not restricting model development.

For instance -- how much wing area is needed to do a pattern consisting of only round maneuvers? How heavy a wing loading can be tolerated for this model? For a .35 model about 275 square inches would be fine. The wing loading perhaps could be 14 or 15 ounces per square foot. We could have realistically proportioned models patterned after Goodyear and Thompson racers. We could have true scale models in the stunt circle. The design avenue would be more or less open to the builder.

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HOOK NOOK

navy carrier notes by orin humphries

I said I'd talk next about nitro, but I find there is still much to be said about

BELLCRANK PLACEMENT

The things that promote low speed performance are the ability to attain a nose high attitude (a function only of CG location), maintian that attitude (apparently by using thick, symmetric airfoils), and roll and yaw angles -- which we will talk about here.

You can get higher yaw angles by using a line slider. A slider without wing trailing edge devices is more effective than trailing edge devices with a fixed leadout guide. A combination of the two is what the big kids use. Trailing edge devices on non-symmetric airfoils will get you a maximum of 120 seconds of slow speed time for the average carrier pilot. Symmetric airfoils with a long line slider will get you to 180 seconds. A line slider, trailing edge devices, and stunter airfoils will get you up to 300 seconds, along with a 3-oz. tip weight and 3 degrees engine offset. Bill Melton says you aren't out of kindergarten until you break 180 seconds. You will need at least four ounces of fuel for times over 180 seconds. Trailing edge devices cause the model to oscillate a bunch in gusts. You will see my solution to this at contests this year.

Toward the end of high roll and yaw angles my designs have become limited to mid-wing aircraft. This permits the mounting of the bellcrank below and external to the wing. In this location one can use a line slider that is not limited by the dimensions of the wing tip. The rules say you cannot go aft of the distance the trailing edge is at the wing root. The longer slider can give a bigger yaw, but only if you will mount the bellcrank an inch-and-a-half aft of where you normally do. Put it entirely behind the spar. I have written an extensive work on why it can be mounted anywhere and sent it to Model Aviation. The piece is too extensive for here, so trust me that you can put the crank on the horizontal stab. if you like so long as the leadout guide is located where we normally do. The equilibrium forces on a model in slow speed flight are such that **high yaw angles necessitate an aft bellcrank location.**

You have to use a latch to keep the slider deployed to the low speed position once actuated. You must also align the slot of the bellcrank with the low speed position instead of the high speed as we have always done. In low speed flight the model is caused to oscillate in the yaw mode by gusts. With a line slider the leadouts get out of designed alignment with the axis of the bellcrank, and this destroys the relative lack of interaction between throttle and elevator functions. As it yaws the throttle gooses and this aggravates the oscillation. Aligning the slot with the low speed position keeps things in design tolerance. There is no undesirable pitch change that you are going to see when throttling with this unusual alignment.

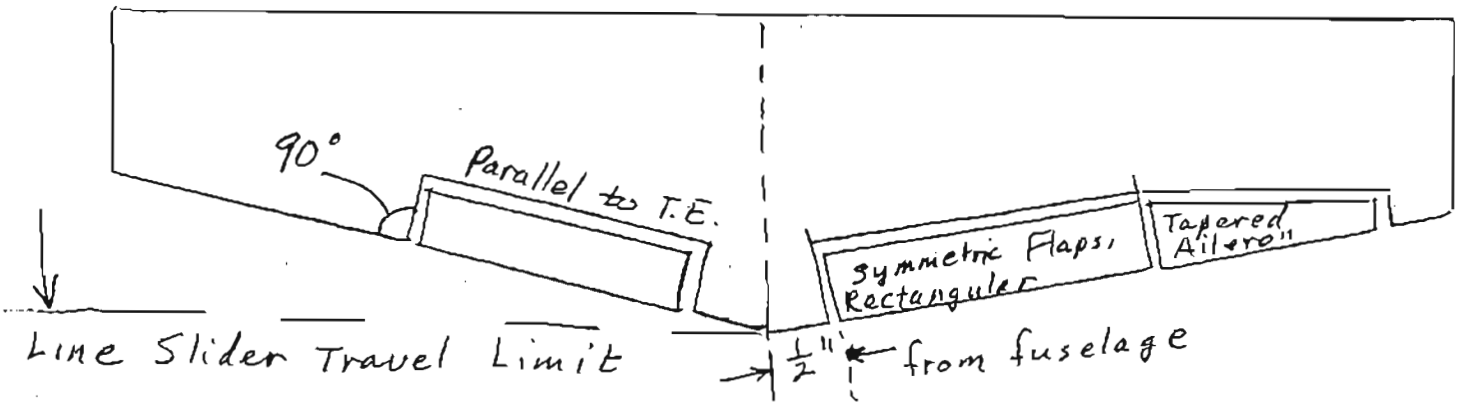
Yes, with this orientation the leadouts will be out of alignment when in the high speed position. No problem. The model does not yaw in the high speed mode.

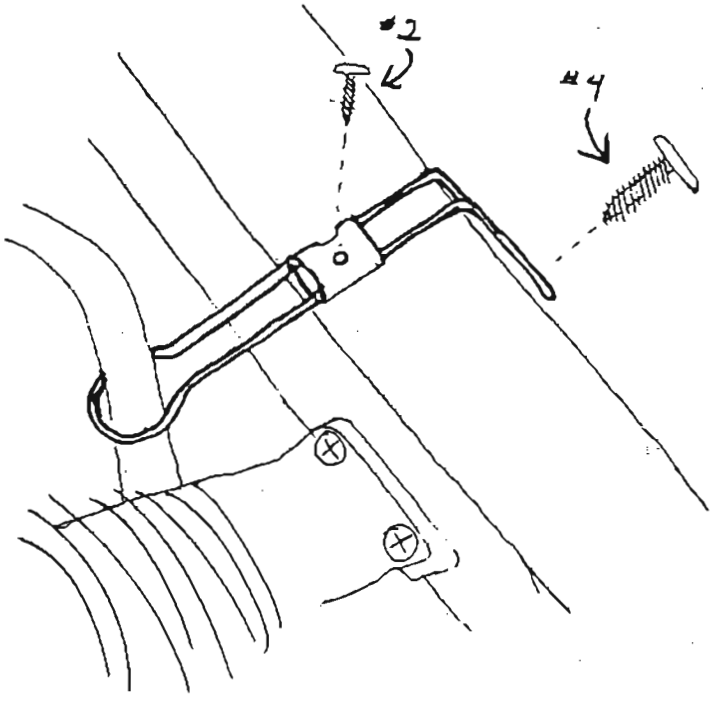
The external mounting also permits the achievement of higher roll angle. The point of these angles is to keep the lines tight on the upwind side of the circle during low speed flight. No tension, no control. I find that every one-and-a-half degrees of roll angle gives another ten seconds of low speed time, within reasonable limits. I like blondes, redheads, whatever (whoops! wrong article...) make that "an angle of around four or five degrees". (Sorry) You get this, of course, by how far you mount the slider below the wing. Mount it securely. One of mine came loose at the Can Nats and I lost the bird.

Sliders and another device called a thrower both cause massive trim changes when actuated. With the older Sturdi-built crank the model jumps down about 15 feet, and with the newer GS/LR cranks the model jumps upward. Plan ahead and be ready for it. This means you must then hold the handle in an awkward position just to keep it level on low speed. I solved the problem quite easily in 1984 and will be happy to show it to you at contests. I want to keep it quiet nationally until I have had the chance to go up against the big kids at the Am Nats. They have us so bad in engine knowledge that the only "catch-up" I can play is in the area of airframes technology.

I have two more major technology advances that you will be seeing at the Regionals and which I will publish after the Nats. Until then, you must mount your crank below the wing to utilize them, and make your trailing edge device cutouts like this drawing.

ORIN HUMPHRIES, N.6803 FORKER RD., SPOKANE,WA 99207 (509) 924-2080





COMBAT FUEL-LINE PINCH-OFF

by Dick McConnell

Bend a large line connector. Drill slide for a #2 sheet metal screw. Add a #4 at the bent end. Hot Stuff screws and use silicone tubing. Works great!

RAPID RICHARD'S

from the SKYWRITER, newsletter of the Seattle Skyraiders.

August 15 & 16 were the dates for the Northwest's first try at endurance flying. Saturday was an endurance only day. Wesley Mullens put in the only two official flights and came within six minutes of the national junior record. It was to windy for the other endurance machines that were built for the event. Watch out for Wayne Spears in this event. If Wayne can stay awake for two and a half hours he'll capture the record for the open class. Bob Danielson had a competitive looking set-up and Dave ans Shawn Mullens had a couple of strange looking machnes.

Sunday was speed and carrier day. I don't have any results at this time. Carrier seemed a little slow and there was a moserate amount of activity on the speed circle. This was another low key contest that everyone was having fun doing what they were doing.

Dave Gardner was the CD, Dick Petereon of Motors And Memories as the sponsor. I didn't catch Larry's last name, but he was a great help in timing and helping out.

We'll try and work some endurance flights in at the Roound Up in September. They might have to be early in the morning or late in the evening, but for putt-putt airplanes thats the best time of the day anyway.

RAPID RICHARD'S RECORD RATIO CONTEST August 15-16, Kent, Wash.

CARRIER (9 entries)

1) 62% - 226.27 points (Profile) Bob Parker
2) 60% - 217.58 points (Profile) John Hall
3) 50% - 210.05 points (CL I) Roy Beers
4) 42% - 184.71 points (CL II) Roy Beers

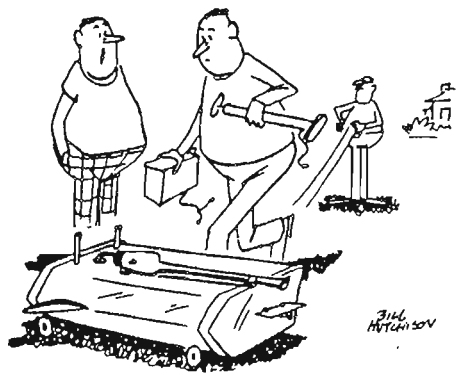
SPEED (9 entries)

1) 91.9% - 195.68 mph (Jet) Jerry Thomas
2) 88.6% - 146.64 mph (F40) Dave Green
3) 82.4% - 108.85 mph (½A) Bruce Duncan
4) 80.4% - 170.87 mph (D) Greg Beers

ENDURANCE (1 entry)

1) 18:37 Wesley Mullens

"Ugh! Mine tastes just like racing fuel, too!"



"That's something new, isn't it . . . Jet endurance?"

NW COMPETITION RECORDS

RECORD PERFORMANCES ESTABLISHED BETWEEN NORTHWEST MODELERS IN SANCTIONED COMPETITION

There are some new records to report, set over the summer. A couple of the long time speed standards were erased. The very long standing 88 mph ½A time was blown away by Bruce Duncan at Rapid Richard's Record Ratio meet by some 20 mph. The prior record had belonged to the late Paul Wallace.

Mr. Jet (Jerry Thomas) qualified for the prestigious 200 mph club at the Lincoln Nationals by turning a 201 mph score. This replaced Chris Sackett's long standing 194+ time in that event.

A previously unentered AMA category was held at the RRRR meet, so it is added to our records roster. Wesley Mullens (jr) put a time on the board to start this event off.

MOUSE RACE I	50-lap:	2:52 (Mike Hazel)	100-lap:	6:33	(Mike Hazel)
MOUSE RACE II	75-lap:	3:40 (Dave Green)	200-lap:	11:49	(Dave Green)
GOODYEAR	70-lap:	4:22 (Clarence Bull)	140-lap:	9:02	(Clarence Bull)
AMA SLOW RAT	70-lap:	3:56 (Dave Green)	140-lap:	7:14	(Dave Green)
RAT RACE	70-lap:	2:40 (Dick Salter)	140-lap:	5:46	(Dick Salter)
TEAM RACE	100-lap:	3:48 (Knoppi-McCollum)	200-lap:	7:49	(Knoppi-McCollum)
NW SPORT RACE	70-lap:	4:00 (Bruce Duncan)	140-lap:	7:47	(Henry Hajdik)
NW SUPER SPORT	70-lap:	3:14 (Dave Green)	140-lap:	7:03	(Dave Green)

½-A SPEED:	108.85 mph	(Bruce Duncan)	FAI SPEED:	172.33mph (Chuck Schuette)
½-A PROTO:	83.63 mph	(Paul Wallace)	FORMULA 21:	79.54 mph (Rich Salter)
A SPEED:	181.56 mph	(Chris Sackett)	FORMULA 40:	154.84 mph (Dick Peterson)
B SPEED:	187.66 mph	(Chris Sackett)	JET SPEED:	201.05 mph (Jerry Thomas)
D SPEED:	179.39 mph	(Loren Howard)		
PROFILE NAVY CARRIER:		232.5 (Bob Parker)		
CLASS I NAVY CARRIER:		318.3 (Roy Beers)		
CLASS II NAVY CARRIER:		329.96 (Orin Humphries)		
ENDURANCE:	18:37	Wesley Mullens		

THE 43 RD.
V.G.M.C. 'INTERNATIONALS'
CONTROL LINE MODEL MEET

SACNTIONED 'AAA'

SEPT 5,6 1987

RICHMOND, B.C.

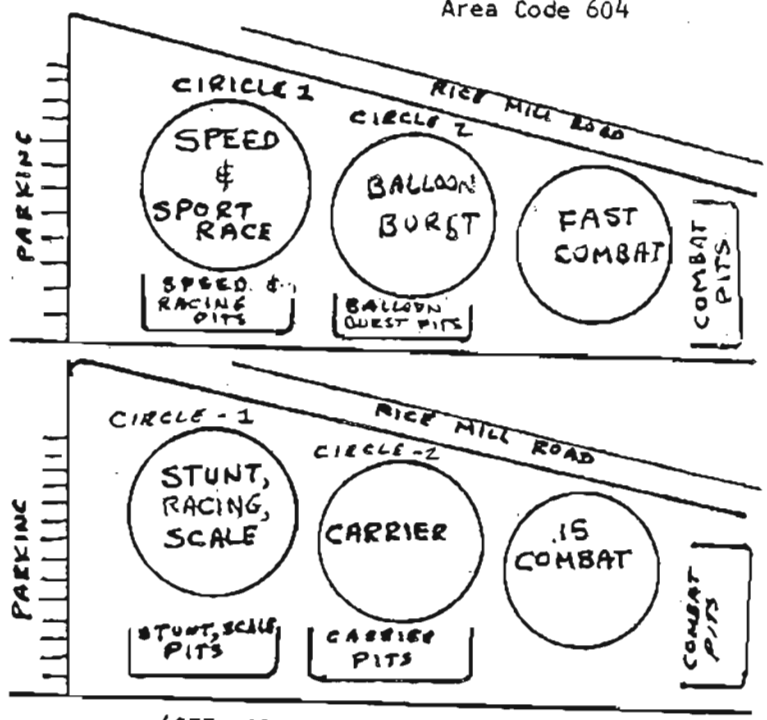
CD: CHRIS SACKETT 299-4500
HENRY HAJDIK 526-9554
Area Code 604

Events Saturday

- ☐ RECORD RATIO SPEED
- ☐ .15 NOSTALGIA SPORT RACE
- ☐ FAST COMBAT
- ☐ BALLOON BURST

Events Sunday

- ☐ OLD TIME STUNT
- ☐ PRECISION AEROBATICS
- ☐ SPORT SCALE
- ☐ PROFILE CARRIER
- ☐ CLASS I-II CARRIER
- ☐ NORTH WEST SPORT RACE
- ☐ .15 COMBAT



(SEE AREA MAP ON BACK)

ENTRY FEES ARE $8.00 PER EVENT; AMA OR MAAC LICENSE REQUIRED; FLYING HOURS ARE FROM 9:00 AM TO 5:00 PM BOTH DAYS; JUNIOR UP TO 18 YRS OF AGE, OPEN 19 AND OVER; COMBAT IS DOUBLE ELIMINATION, 15 COMBAT USES .15 SIZE ENGINE IN AMA FAST STYLE BOUTS, FAST COMBAT AS PER AMA RULES; SPEED IS RECORD RATIO BASED ON AMA RECORDS; NORTHWEST SPORT RACE USES TYPICAL NORTHWEST RULES; BALLOON BURST USES LOCAL RULES WITH BARRIER BALLOON IN FRONT OF TARGET BALLOON WITH TWO MINUTES TO BURST AS MANY AS POSSIBLE; SCALE WILL USE AMA SPORT RULES WITH A 15' STANDOFF JUDGING; 15 NOSTALGIA USES LOCAL VGMC RULES, AVAILABLE UPON REQUEST; STUNT WILL USE THE PAMPA/AMA RULES, BOTH EVTS. CARRIER USES FULL AMA RULES; TROPHIES THROUGH THIRD PLACE ALL EVENTS PLUS PRIZES; MOTELS CLOSE BY AND REASONABLE.

NAME_____ AGE_____ MAAC/AMA_____

ADDRESS_____

$8.00 X NUMBER OF EVENTS ( ) = ☐ ENTRY FEE

Send to VGMC P.O.BOX 82294, Burnaby, B.C. V5C-5P7, CANADA

SEPT 5-6 -----RICHMOND, BRITISH COLUMBIA----
43rd VGMC Internats
Events: Precision Aerobatics (2 classes)
15 Combat, Balloon Bust, 15 Sport Race,
NW Sport Race, Record Ratio Speed,
Profile Carrier, Class I & II Carrier
Site: Richmond field Sponsor: Vancouver
Gas Model Club CD: Chris Sackett,
Box 82294, North Burnaby, B.C. Canada
V5C 5P7 (604) 299-4500

SEPT 19-20-----KENT, WASHINGTON----------
Washington State Championships
Events: Combat: ½A, AMA Slow, AMA Fast,
Racing: Mouse I, Mouse II, NW Sport
Race, NW Super Sport Race, Sport Gdyr.
Carrier: Profile, Class I & II
Profile Scale, Sport Scale, Balloon Bust,
Precision Aerobatics (4 PAMPA classes)
Old Time Stunt, Record Ratio Speed
Site: Boeing Space Center- Kent
Sponsor: Seattle Skyraiders
CD: to be announced Skyraider contact:
15559 Palatine Ave N. Seattle, WA 98133

OCT 4 -------RICHMOND, BRITISH COLUMBIA----
VGMC Sport Racing Grand Finale
Event: NW Sport Race
Site: Richmond field Sponsor: Vancouver
Gas Model Club CD: Henry Hajdik,
1629 London St., New Westminster, B.C.,
Canada, V3M 3C8 (604) 526-9554

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66	68	69	70	71	72
74	75	76	77	78	79
80	81	82/83			

THE FLYING FLEA MARKET

WANTED: Monoline handle, complete or pieces. Jeff Cleaver, 454 Four Corners Road, Port Townsend, WA 98368

FOR SALE OR TRADE: Tiger Jet nib & Eureka F-86 kit, designed for tiger jet. Both for $200 or trade for recent model Dyna jet nib. Berkeley B-17 52" span kit and box in excellent condition. $75 or trade for ST 60 stunt engine nib or used very low time. Burt Brokaw, 494 E. 700 N. Ogden, Utah 84404 phone (801) 782-7723

HELLO! Any control line flyers in the tri-state area of Huntington, WV, Ashland, KY, Ironton, OH, call George Mitchell (614)894-4481

WANTED: Following kits, or good ready-builts: Berkeley AJ-1 Savage, 5BC Helldiver, A-12 Shrike, P6E Sterling P-38, Spitfire Stunt, Guardian, Polish Fighter, Consolidated Twin Terror, MewGull. Veco Chief, Brave. John Kelinske, Jr. 1312 Bomar, Houston, TX 77006

WANTED: SuperTigre G-21 .40 engine, excellent to NIB., Rear ball bearing ST G-15 front intake engine. Also Kelly fiberglass props: 8x7, 8x8, 9x7. Gabe Manfredi, 601 NW Selvitz Rd, Port St. Lucie, FL 34983

FOR SALE: ST 60 NIB $75, Fox 25 used $10, Fox 19RC NIB $15, Sterling Monocoupe $15, Sterling Waco SRE $15, Goldberg Voodoo partially built $5. Gerald Schamp, 931 Calapooia SW, Albany, OR 97321

WANTED: 1967/68 British Aeromodeler Annual. Mike Hazel % Flying Lines

WANTED: Pen Pals. I am in an area with no CL fliers. Would like to correspond with Stunt fliers. Walter Hicks, 2252 Brigadoon, Bishop, CA 93514

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