

MAXIFAX

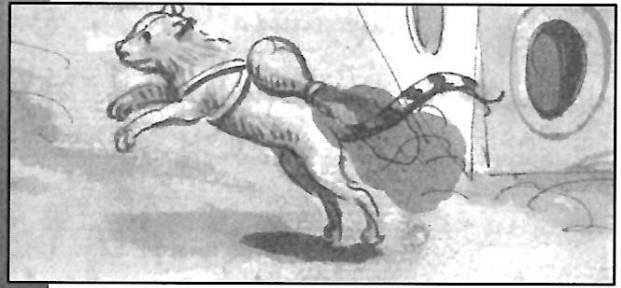
D. C.
MAXECUTERS

Journal of the D.C. Maxecuters

...home of the dreaded Potomac Pursuit Squadron #6 of the Flying Aces Club

Editor: Dave Mitchell

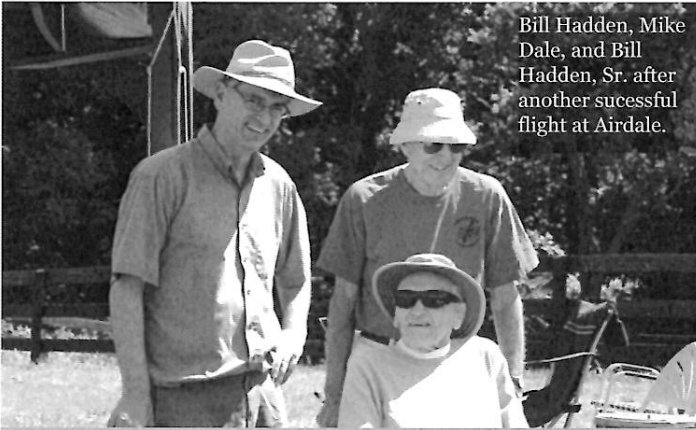
2016-3



JET

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Bill Hadden, Mike Dale, and Bill Hadden, Sr. after another successful flight at Airdale.



Mike's new Majestic, doing what it's paid to do. It's a big'un! From the Ben Buckle kit.



Pat Daily's gorgeous Curtiss F6C-3 Navy Hawk on a fly-by.

photo: Bill Hadden



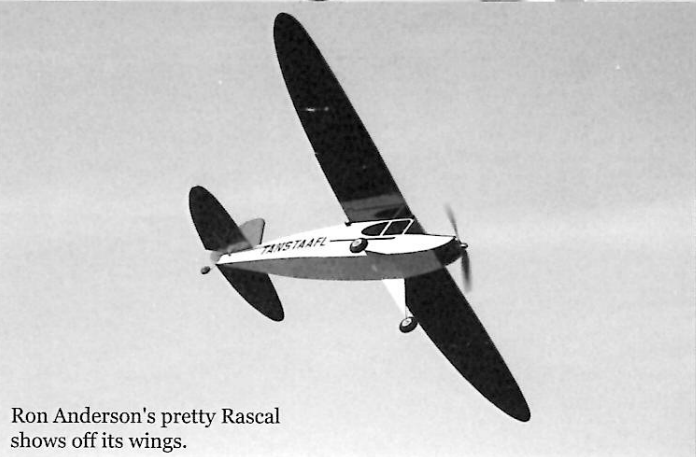
John Hunton shows off his all sheet SE5. It's a littl'un!



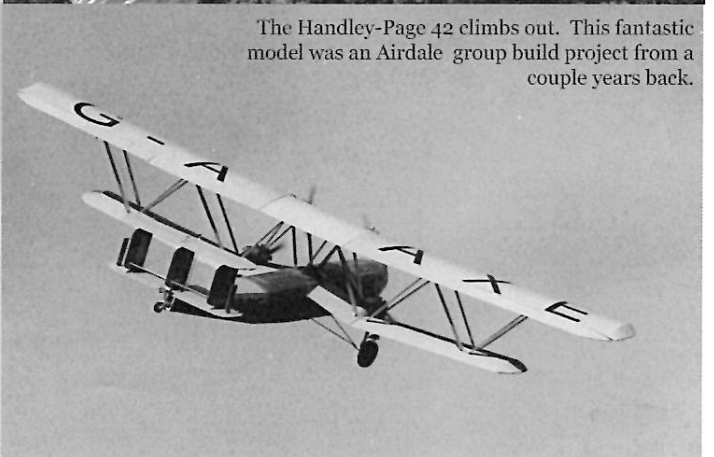
Detail shot of Ned Kragness' Curtiss Robin, modeled after his full-size one!



Pete Carpenter gives his big, beautiful Mr. Mulligan the heave-ho. That's a camera strapped to the fin...



Ron Anderson's pretty Rascal shows off its wings.



The Handley-Page 42 climbs out. This fantastic model was an Airdale group build project from a couple years back.

MAXFAX 2016-3

It's about time we gave some recognition in these pages to **Mike and Mary Dale**, our hosts many years running now for the **Airdale** fly-ins in Culpeper, Va. Why so late in coming? Well...the dirty little secret is that there are a lot of Maxecuters who *fly radio control*. I know...I know. It's shocking. And this rag **is** primarily concerned with free flight. But forgiveness being one of the greatest human capacities, we must summon it now and give this duo their due, for the Airdale events are indeed a bright highlight of the local modeling calendar, featuring all sorts and sizes of models. And while R/C takes center stage there, you CAN toss a FF model if you want, and no-one will look at you funny. Photos on pg 3, courtesy of **Pat Daily**, and a nice write up from **John Hunton** on pg 4.

Ok, what better antidote to a dose of R/C than some of the wildest FF there is? I'm talking of course about **FAC Jet Catapult!** Speed! Thrills! Spills! Occasionally, a 15 second flight! It doesn't take long to get a model together, you get a lot of exercise packed into a short amount of time, and the satisfaction of getting one of these babies to go well will ride you through the frustration of trying to get one of these babies to go *at all*. We feature a nice write up from **Pres. Simpers** plus a couple of his plans. **Rich Weber** adds his 2 cents, which are worth at least a nickle anywhere else. **Mike Kaiteris**, who builds some of the nicest Jet Cats you'll ever see, contributed his F9F-8 Cougar. **Stew Meyers** provided me with the raw materials to draft up a plan of his 14" Vickers Valiant. I took some (ok, a lot) of liberties, stole a few ideas from the other plans, and came up with the enclosed. Finally, feeling bold, I drew up a Supermarine Attacker. Unbuilt, untested...thus, **CHOCK FULL** of potential!!

Last but not least, we have a report and photos from the Highland Springs Fling event near Richmond VA, , back in June. This was a first-time event at this venue and was a lot of fun, with a mix of FAC and TSA indoor flying going on.

There is a sad coda to the meet, though; **Mark Batterson**, who was there with his dad **Reggie**, left us in mid-August. Mark was a great modeler, a super nice fellow, and a fixture of the Richmond area hobby and cycling scene. Our condolences to his family; he will be deeply missed.



SUBMISSIONS - send articles, plans and high-resolution photos to Dave. Electronic submissions preferred, but I do old school too.

Dave Mitchell, Editor
230 Walnut St. NW
Washington, DC 20012
davedge@me.com

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Stew Meyers
8304 Whitman Dr.
Bethesda, MD 20817

Make checks payable to "D.C. MAXECUTERS"
OR you may use PayPal at the website:
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Membership questions should be addressed to Stew Meyers; phone 301-365-1749. Email gets immediate attention. stew.meyers@verizon.net

Your mailing label indicates the year and month of the last issue of your current membership. An "X" in the box below your address is a reminder that your dues are due.

BACK COVER: **Don Srull** has recently published a neat volume of his classic MaxFax cover drawings--62 lovely images in all, with a bit of history thrown in for good measure. If you would like a copy of this handsome book, send 15\$ cash or check to:

Don Srull, 941 Kimberwicke Rd., McLean, VA 22102
dsrull@gmail.com

FRONT COVER: A Martin B-57, a couple of F9F Cougars, and.....wait, whaat? Well, scholars, the original Jet Cats appeared in the 16th century, suggested (along with rocket birds) as an ideal means to carry fire into the midst of an enemy town that might otherwise be out of your reach. Simply procure a cat from the offending city, attach a suitable fireball, and let 'er rip. No word on whether the brave felines could be counted on to return for another round.



And you thought our Jet Cats were
3 hot. Me-OW.

MAXECUTERS PROFILE: MIKE DALE

As CEO of Jaguar North America Mike always dreamed of retiring and building and flying model airplanes at his leisure. Of course he never had time to build or fly anything while he was running Jaguar, but during his travels he collected model airplane kits, including those given to him by his friends. Once Mike finally retired he had amassed an excellent collection.

When Mike and Mary bought land in Culpeper, Mary wanted it big enough for her huge dogs and Mike wanted it big enough to fly his model airplanes. He had a nice shop designed into his new home on the opposite end of Mary's sewing room, and figured he would sit down to start building some of those kits. Then the phone rang. It was the Culpeper County Airport Committee. Soon Mike became chairman of that Committee.

He got the airport going in the right direction, and picked up the kit again. The phone rang...he became Chairman of the Air Fest Committee.

Somewhere along the way, Mike also became involved in E Squared, a vital educational program for Culpeper County where students are brought into real-world business scenarios.

Aaaaand..during this time Mike persuaded the County to develop Lenn Park into a beautiful model airplane flying mecca, where local modelers come to fly every good day. Modelers even come from all over the east coast to compete with Radio controlled models a couple of weekends every year. Local school children are taken there each year for introductory flying lessons by the model club that was formed around that park.

Oh yes...since Mike had organized the successful "Flight Down the Potomac" from Culpeper County airport last year, he was asked to organize the "VE Day Victory Celebration" a massive collection of WWII airplanes coming from all over the US, the likes of which haven't been seen since the war, which flew from Culpeper County airport to over the National Mall in DC.

Finally, a few years ago Mike and Mary started an informal program where local modelers could come by on selected Saturdays during the summer and fly with Mike. The **Airdale** fly-ins have become a highlight of the local flying calendar, and some of the best modelers on the east coast come to fly in Mike's side yard. It is a truly enjoyable occasion for everyone involved. Mary provides wonderful support for these events (Ed. note—see insert, left).

BEHIND EVERY GREAT MODELER....

If you visit Pat Daily's Flickr photo website at:

<https://www.flickr.com/photos/124772115@No2/albums>

...and sift through the superb photo sets dedicated to the AIRDALE events, you'll doubtless run across a comment or two about **Mary Dale** having "provided a great lunch", often times having been assisted in this endeavor by **Mary Hunton**. Well done, ladies!

It might seem that these afternoon fetes are achieved, to paraphrase from the movie *Chariots of Fire*, "with the effortlessness of the gods". Considered more carefully, it should be apparent that the energy and logistical prowess required to carry out these events outstrips that of the "fun part" by a factor of ten at the very least. So if you should find yourself out at Airdale, enjoying the superb spread that magically appeared while you were craning your neck skyward, remember to give your hosts the recognition they deserve! BRAVO! And maybe even give 'em a hand....

Ever the organizer, Mike has used his skills to put together teams to build a couple of historic aircraft, a ten foot wingspan Handley Page HP-42 and an eleven foot wingspan Halifax bomber. Even now he is building a full scale Nieuport 28 with some of his modeler friends. In his spare time, of course.

Mike's full-scale Percival Provost has been featured, along with a scale model of it, on the front cover of a national model airplane magazine. He has also been the featured modeler of an international model magazine inside the rear cover.

So with all that Mike does...hey, what about those kits? Well, he **has** found some time to build a

few of them! His greatest enjoyment currently is to sit in his lawn chair and fly his Ben Buckle-designed electric *Majestic* old-timer model, enjoying the sky and his good model airplane friends. Check out Pat Daily's pictures on page 2 for a good idea of what it's all about...

- John Hunton



THOUGHTS ON JET CATAPULTS

by Glen Simperts

Any number of articles have been written about what works in scale jet catapult. This article instead highlights some pitfalls to avoid in chasing the elusive successful flight of these tricky beasts. As someone who has yet to actually win the event, I have lots of experience in what doesn't work.

Configuration

I thought that scale jet catapults would be easy. I had lots of experience building hand-launch gliders and non-scale catapult gliders. But the optimized configurations of standard AMA competition gliders and tricks like stabilizer tilt to induce a turn are not available for Scale Jet Cats. FAC general competition rules explicitly forbid stabilizer tilt on FAC models to include jet cats – bummer.

Compared to non-scale gliders the configurations of most scale jets feature a nose that is too long and a tail moment that is too short. Frequently there is excessive side area compared to the wing area. I haven't explored all types of shapes, but I've explored some excursions and learned some lessons about configurations. My go to shape is an airplane with a wingspan and length about the same (currently I'm flying a McDonnell Banshee and a Martin B-57A).

The author's Banshee; plans in this issue



I got excited by the prospects of a high aspect ratio wing and built a Martin RB-57D. This is a high altitude version of the B-57 with a big wing. It did not work as well as imagined. A lot of the weight is concentrated in the long wing compared to the really short tail and rear fuselage. This resulted in an airplane that had a high moment of inertia along an axis perpendicular to the wing and low moment contribution fore to aft from the fuselage. In a similar way to inertia from mass there was an imbalance of forces from air resistance to raise a wingtip compared to the force to raise the tail. The glider was very touchy in pitch going from loopy flying from too much incidence to not enough incidence with tiny changes. The long wing resisted most efforts for a bit of rotation in the transition that could position the glider for a clean roll-out. The glide was OK, but not enough to compensate for the difficult launch. I tried to correct the out of balance moments by cutting window panes in the wing, removing balsa, and covering with tissue. This didn't change the flight much, gave me a

wing that easily warped, and one that screamed it's defiance to the wind with every launch. This model will end its days with the kids of Bonnie's cousins (previous models given to these kids lasted all of an hour – they enjoyed them even more as parts started to break off with every launch).

Back in the Max Fax of 1/97 I had a design for a 7" B-2 flying wing. It flew great in the hanger at Pax River back in the day. With this success I thought that a bigger B-2 would work out. Despite trying many similar flying wings (B-2s, Gotha, and a Douglas X-4) I've not been able to reproduce this success. All of these flying wings have a relatively short fuselage and long wing. They are very touchy to tiny changes in c.g. and amount of bent-in trailing edge reflex. While great fun to sail across an auditorium they are outrageously difficult to launch with any consistency at higher power. Many flights ended with spectacular aerobatics that would please any child. A good jet cat performance – not so much.

Strength

The strength required for these gliders is high to best utilize the full potential of a loop of 1/4" rubber. Building a glider as light as possible and yet strong enough is a balancing act. Many plans show a bent wire glued in a hole in the fuselage. For me this has not proven to be good enough. One of these hooks pulled out at full stretch, launching the wire across the flying field. This is something I only wanted to do once. My hooks are a piece of plywood firmly glued in a sandwich with the strong backbone of the fuselage and nose weight elements.

Other strength elements come into play both at full extension prior to launch and immediately upon release. I was surprised just how much pull comes from the rubber band. I've had the glider pulled out from my fingers before I was ready. In trying to lighten the rear of the glider I have had some places where the balsa chosen was too light. This resulted in the fuselage coming apart

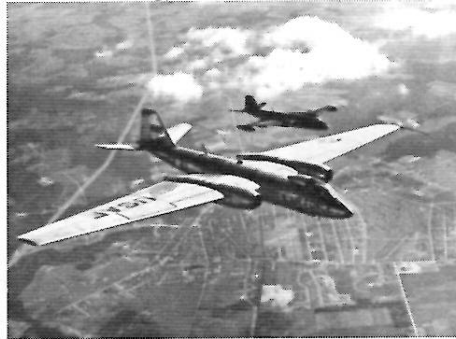
between the hook and my grip. I now use a strong fuselage backbone to which the hook, grip, wing, and tail all connect. I still cringe if I hear any creaking sounds at full pull. After launch I've had a wing break off under the loads. Sometimes the horizontal tail will break letting the wing get into trouble. For this reason I use spruce or basswood leading

edges on all surfaces. The heavy wood near the leading edge on an otherwise light balsa surface helps to keep flutter at bay (a common source of the scream that some gliders make upon launch).

Airfoil

Many scale catapults pay little attention to the airfoil used. One of my early jet cats had a thin 1/16" rounded leading

The Martin RB-57D



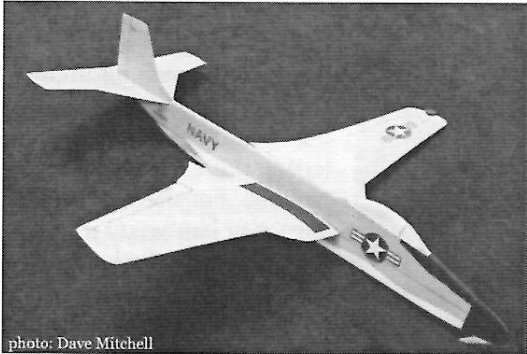
airplane was very touchy. If launched perfectly the flight was great. It was hard to not fly through some part of the launch, transition, or glide where the airflow did not meet the wing at too large an angle of attack (separated flow on the top) or too low an angle with separation on the bottom. This airplane would stall and spin both right side up or upside down. Adding another piece of wood to thicken the wing improved the flight consistency. The airfoil that I now try to emulate is the BE5017VN catapult airfoil described in the 2010 NFFS Symposium (see insert next column--ed.) Developed using the XFOIL computer modeling program it features low drag at zero lift and decent L/D in the glide. It is a 5% thick section with a vortex nose (flat section just behind the leading edge) to help transition the boundary layer on these small gliders. A thicker wing would be stronger and produce more lift but have higher drag. I've tried to carve the wing using a template for this shape but what a pain in the neck.

Some Aspects of Trimming and Launching

OK, so by now you have built a light strong glider, with good structural integrity, and a good layout. There are still many ways to screw up the launch. It was a middle schooler competing in the Science Olympiad elastic-launch glider event who taught me a thing or two about launch discipline. Randy Kleinert and I both noticed that this girl first pulled the glider back to the desired tension, then in a separate motion set the bank angle, and finally she elevated to the vertical angle for launch. She had been clearly coached to think about each of these elements and decide what worked.

My wife, Bonnie, has been trying for some years to get a good photograph of a jet cat in flight shortly after launch. Careful examination of these photos revealed two problems with my launch technique. In an effort to get more pull on the rubber loop I had taken to gripping model not at the back of the fuselage but at a point not that far

Another shot of Glen's Banshee



flight. This would lead to a wobble of the fuselage from side-to-side upon launch. You couldn't see the model move in this side-to-side way but I had noticed that some flights just didn't go as high as others. This was

particularly noticeable with a P-80 glider that had enough side area to cause big side forces if launched poorly. Since the model is off to the side of your head it is hard to see this misalignment. Being aware of the problem made it easy to correct. Secondly, I was also, on occasion, holding the launcher at a different tilt angle from the tilt of the glider. This twisted angle would impart some rotation during launch.

I have adapted the practice of the AMA gliders

with a hook near the nose. This means that the first motion of the glider has the wing at a low angle of attack. It is only as the glider slows that the decalage drives the wings towards a lifting condition. Thus while going fast the

The FAC Extension to Schrodinger's Quantum Thought Experiment (or, why should his cat have all the fun?) developed by Glen Simpser

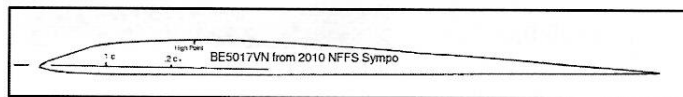
A brand new model plane in a box is simultaneously an amazing flyer and a doggy disaster.

As soon as you open the box and fly it, instantly it becomes one or the other.

By extension an airplane you only imagine but never build is always an amazing flyer.

wing lift and hence drag are low. I launch this glider more vertically than I would if I relied upon the wing to take it skyward. As you position the catapult hook back towards the wing the wing generates more lift during launch. If you find yourself losing sight of the glider behind you head immediately after launch it is often from a rearward hook location. Image a line made by the rubber band to the hook and think where the center of gravity is on the model (both along the horizontal length and vertically). The rubber band will orient the wing in the air upon launch.

Transitions from launch to glide are sensitive to the location of the center of gravity. I prefer a center of gravity as far back as the glider will tolerate. This gives a



model that has a low margin of stability in pitch running with a low angle between the bottom of the wing and the horizontal stabilizer. It is risky because a small change in incidence can result in a lawn dart from not enough incidence. When it works the glider will flop over at the top of a steep launch rotating easily about the c.g. The glider is bouncy and more sensitive to the air around it.

An airplane that is very stable requires a lot of incidence to successfully glide well. This can be made to work with a lot of bank angle in the launch to force a glider that would otherwise loop into an upward spiral. The size of the loop is directly related to the relative incidence between the wing and horiz. stab. The extra stability help in flying in wild windy days and makes the glider fly in a predictable path. The glider is flown through the transition to glide as it will not readily flip at the top of the launch. This is done by having the upward spiral end a bit downwind so as not to stall at the top. With practice you can get the glider to smoothly fly from the spiral up into

FUSELAGE

1/16" x 5/8" spruce stick core; complete profile (including rudder) with 1/16" balsa top and bottom. Laminate between two layers of med. hard 1/16" balsa

RUDDER

is part of the 1/16" core fuselage assembly.

Top side of wing

WING

3/16" sheet tapered to 1/8" at the tips. High point of airfoil at 25% of chord; "turbulator" hump at 10% of chord. Airfoil is flat from 25% high point to the trailing edge.

7/8" dihedral each tip

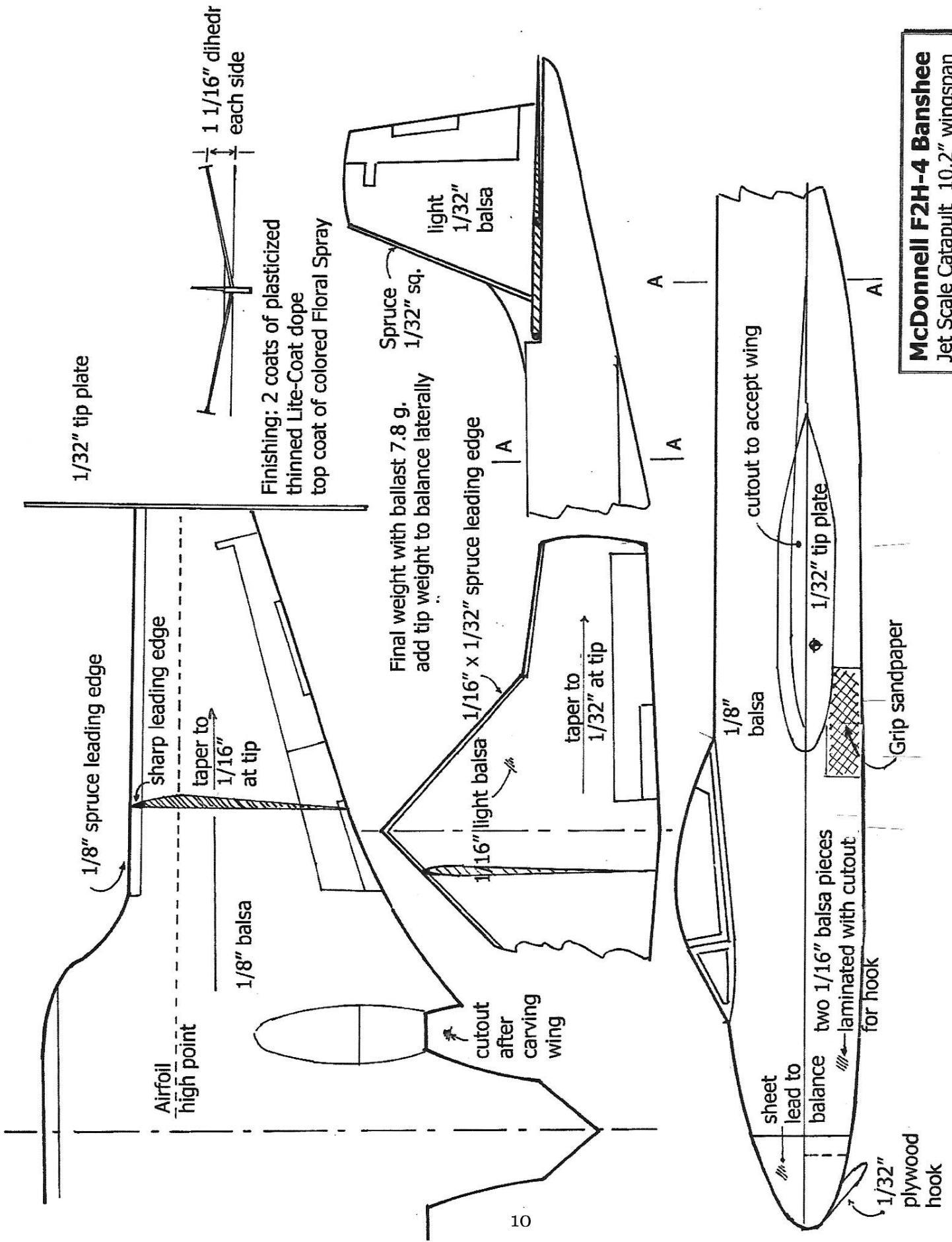
STAB
1/32" hard
balsa

Bottom side of wing

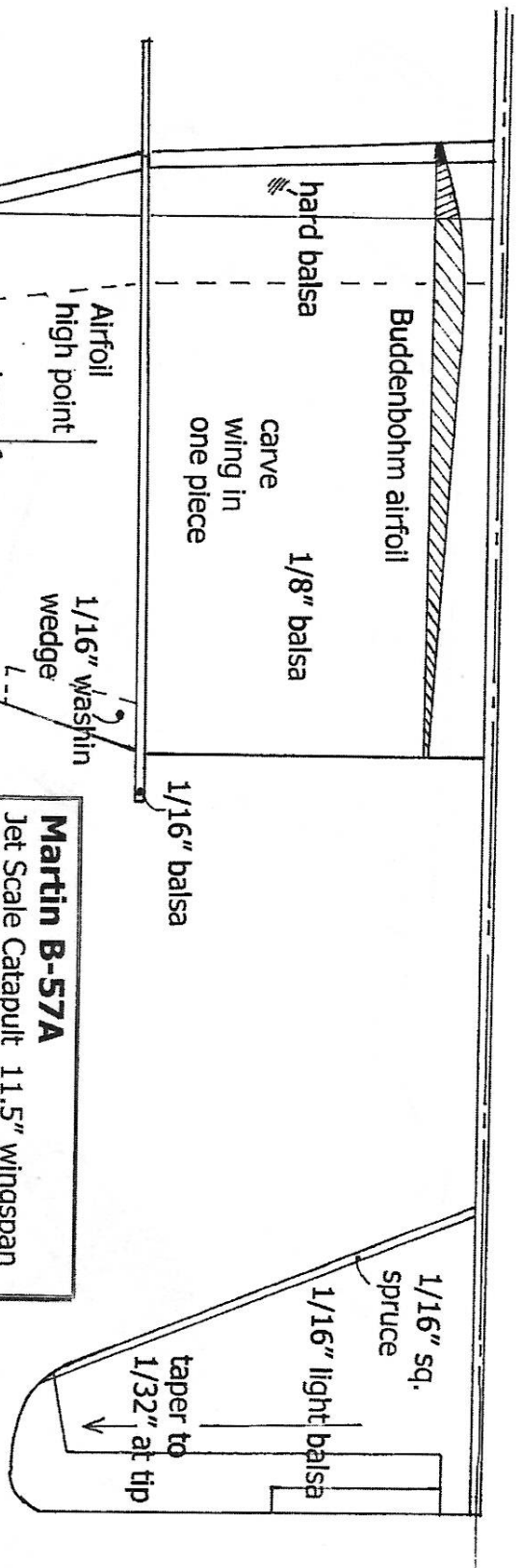
SUPERMARINE ATTACKER

FAC JET CAT by DAVE MITCHELL

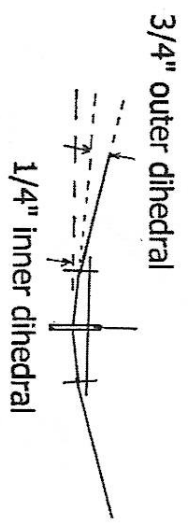
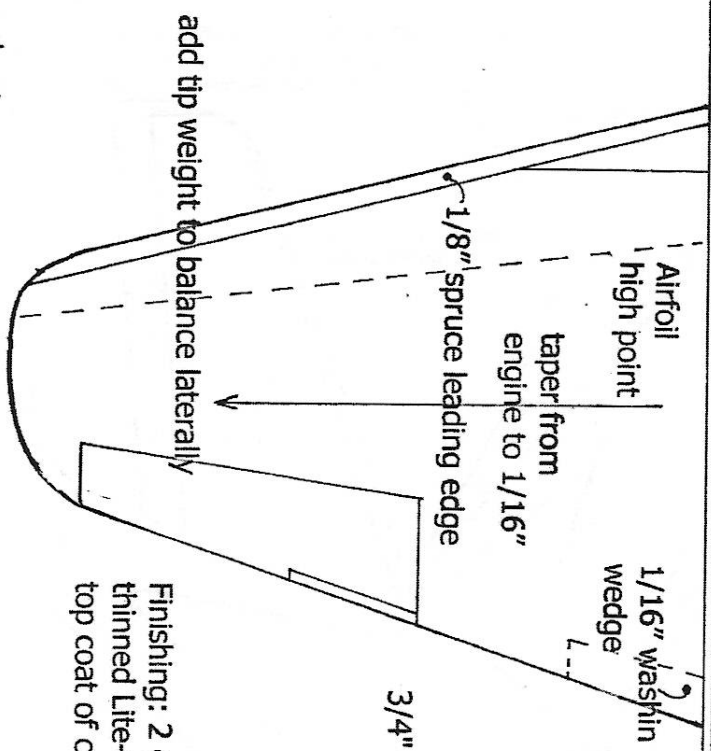
1/16" wire
sandwiched in
core



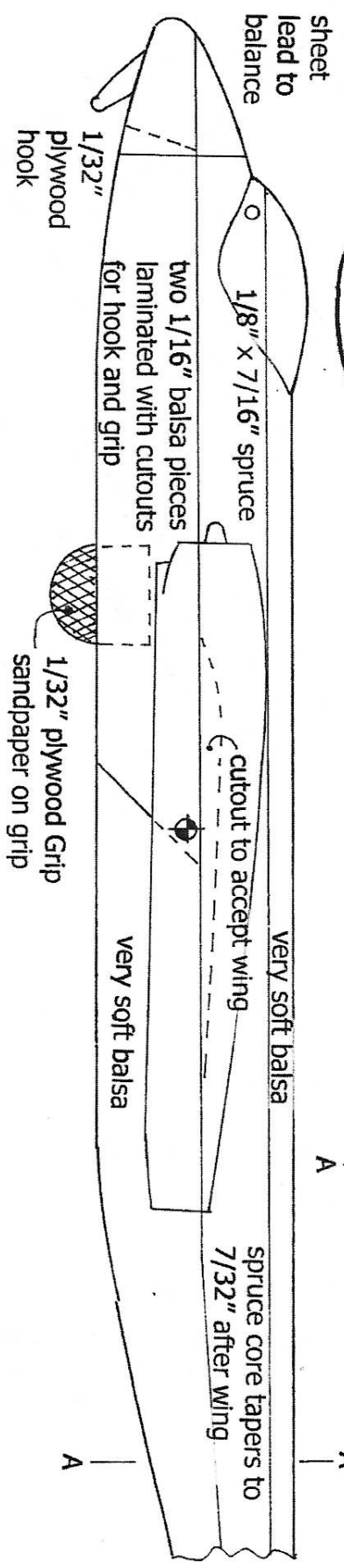
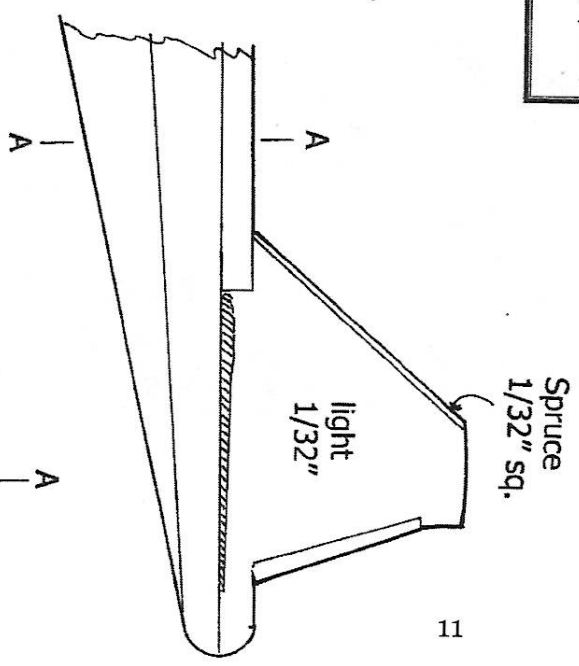
McDonnell F2H-4 Banshee
 Jet Scale Catapult 10.2" wingspan
Glen Simpers 10-2009

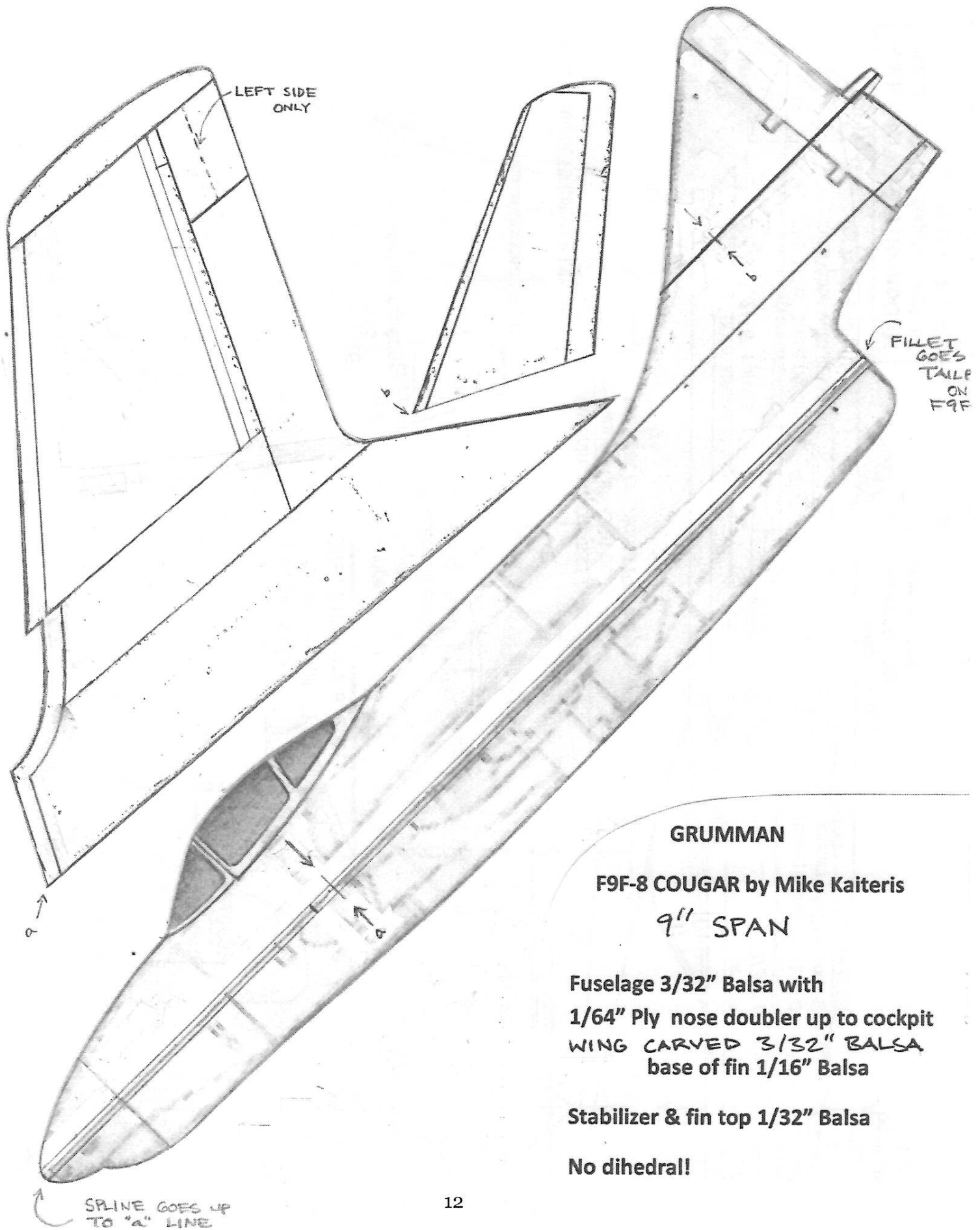


Martin B-57A
 Jet Scale Catapult 11.5" wingspan
 Glen Simpers 8-2011



Finishing: 2 coats of plasticized thinned Lite-Coat dope
 top coat of colored Floral Spray





GRUMMAN

F9F-8 COUGAR by Mike Kaiteris

9" SPAN

**Fuselage 3/32" Balsa with
1/64" Ply nose doubler up to cockpit
WING CARVED 3/32" Balsa
base of fin 1/16" Balsa**

Stabilizer & fin top 1/32" Balsa

No dihedral!

Thoughts on Jet Catapults, *cont.*

the glide. I can't launch a more stable model as high as one with a more rearward c.g. Finally, you can definitely overpower these airplanes. Some airplanes with their many breathed-in settings fly better if not launched at the maximum power allowed. If there are crazy things happening at launch it might be worth trying to slow down the action and sorting out things at a lower power.

My next glider

Since your next airplane project always flies much better than your current airplanes (see insert page 6-Ed), I have some ideas for my next jet cat. I want to go to a glider that is a bit larger than my current ~11" designs. I thought that I could drive a small glider further above ground turbulence getting to smooth air. This hasn't worked well for me because the higher speeds made tiny adjustments overly effective. I had trouble understanding what was going on in some of the flights and getting the desired consistency. The next airplane will be larger, more in line with the 15-18" size commonly used in AMA non-scale gliders.

I want to go to a slightly thicker 6% airfoil. The wing will have taper in thickness on the other 1/3 of the wing to lighten wingtips for effective roll. This thicker wing trade-offs launch altitude for greater lift in the glide. I hope that this also will improve consistency in flight. Finally, I'm not convinced that adding engine pods or tip tanks for the bonus points are worth the added drag and pain when they break.

With all of these words you are more than ready to try the crazy world of jet catapults. Bonnie loves the fact that I get lots of exercise walking back and forth chasing the beasts. A lot of excitement in just a few seconds...

-GS

STILL MORE THOUGHTS ON JET CATS

By Dave Mitchell

Anyone who listens to ME regarding Jet Cats is a fool; I've precious little experience with the things, and what I have had was of no account: a P80 that never exceeded 12 seconds in its short career as a glorified lawn dart. Nevertheless, I'll hazard a couple of observations...

DESIGN So you have your three view, and you're all ready to get to work with an X-acto. It seems pretty simple, as it's all about profile, right? Except that there are decisions to be

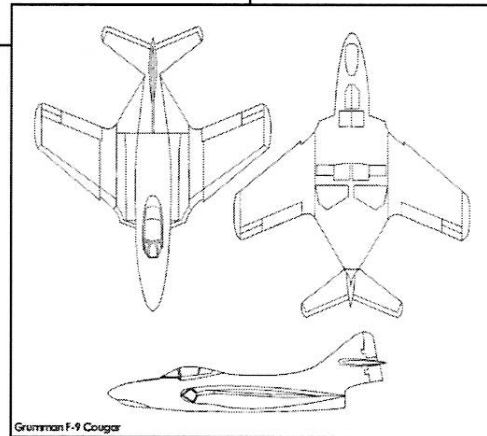
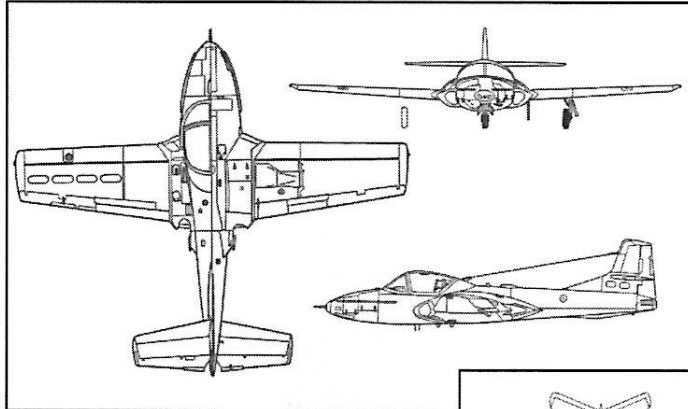
made. Observe the plan view of the Cessna T-37. Look at that wiiiiide fuselage! So, once that fuselage gets shrunk down to an 1/8" thick, what do you do with the wings? Do you take their outline as they are and just move them in? Except then your 14" glider just became an 11" glider, and the wings seem small in proportion to the fuselage. Do you scale the whole thing up to get back to 14"? That's good, except now the fuselage is oversized. Do you extend the root of the wings to meet the new centerline, leaving the tips at 14"? Fine, pretty easy with the Tweet, but with a wing like

the one on the F9F Cougar, that's not such a straightforward proposition. Anyone who ever designed a NoCal has come up against this little conundrum. In the end, there's no right or wrong way--it's just one of the things you have to decide.

FLYING Jet Cats are a fun way to get a lot of flying done in a short time. I like Wally Farrell's approach: he comes out to the field with three or four, launches them all from the same spot, then collects them. They can be frustrating, though; you really need to approach trimming them methodically. One of the best ways to do this is to have another pair of eyes working with

you to help sort things out. Your buddy will see things in your launch technique that are invisible to you; likewise, they will be able to tell you things about the plane's climb and roll-out that you're likely to miss, if only because it all happens so darn *fast!*

-DM



Grumman F-9 Cougar

Mike Kaiteris' F9F-8 Cougar A slick machine. Plans in this issue.



In a heroic quest to bring information to the masses, dedicated sleuths continually scan the airwaves for stray messages that shine light into the shadowy corners of the secret processes of the great powers! Yes modelers! It's time for another thrilling episode of.....

RADIO INTERCEPTS



Today's episode: (R)udder Madness Continues!

(static) brought up the subject of steep climbs for our ML ships. I shared my observations on my two (static), both of which climbed very steeply and would maintain that high rate of climb right on through the end of the motor run. I believe the fin and rudder size of both of these ships is at the extreme low end of the spectrum, and are sized just a whisker above the point where Dutch roll in the glide disappears. The (static) flew right off the board with the size shown on the (static) plan. The (static) needed a bit of clear plastic added at the tail skid to enlarge the vertical area just past the point where Dutch roll was eliminated. Add to this the fact that (static) had a new (static) with a fin and rudder sized at 90% of scale, and it climbed and performed really well in WW II. Any others have data points on this topic?

I guess what I learned to-day is that half a Dutch roll is still a Dutch roll. A model that needs more rudder area can Dutch roll just half of one cycle..If my model had a full right-to-left and left-to- right swing I would have said "Bingo. Add rudder." Half a Dutch roll was what I saw and failed to identify or rectify til today. Sorta like that lyric from the Beatles' "Day Tripper." It took me a while to find out... but I found out...It only took one flight with a Rube Goldberg style additional rudder area and suddenly my school yard testing field is way too small!

I have really focused my efforts on prop/rubber combinations, and after several models realize that I still have a lot to learn. My own approach has been to get the model to leave my hand in a straight upward path...it can turn to either direction after that, but I try to trim so that the first several seconds has it climbing straight and then go into a turn. I have gotten in to some trouble with this at times since most of my stuff really covers ground and uses up a lot of the field. I probably need to learn to trim for a circle better than I do now but I always shy away from using rudder since it is so powerful.

My (static) has been a troubling ship, capable of some good flights but with a strong tendency to fly tight in whatever direction it gets pointed, and with that long nose it is extremely sensitive to thrust line adjustments...I think that using the "double gurney flap" on the rudder has fixed that, but more flying will be needed to finally confirm that. As pointed out to my by (static), almost all of Earl Stahl's ships have that same tendency to be too directionally stable. In hindsight, it certainly was true of my (static). I wonder if more experimentation with double **gurney flaps** would be beneficial...

I haven't yet had any brilliant successes with the double gurney flaps on the vertical tail. Only tried it a few times, and I'm planning to give it a go on a couple of reluctant models currently on the "to be sorted out" list. If nothing else, it's a quick and cheap trick to throw at the spiral dive problem, and if it doesn't work, it's easy to go back to square one.

The horizontal tail is pretty easy to measure, even if you want to go all mathematical and use that formula for tail volume. There's also very little downside to having too much of that good thing. The vertical component seems to be a lot more slippery. For one thing, it's affected by several other components of the model's layout. The amount of dihedral has a huge impact on spiral stability, and the size of the prop comes into play too. I suspect that the position of the stab may play a roll, changing the vertical area that is somewhat blanked out of the propwash depending on where it's situated.

All that conjectural/ theoretical blather aside, my recent escapades with the (static) have reinforced the idea that the vertical tail component is the key to solving a lot of those spiral problems. It flew like stink until the stooge incident that crushed the fuselage. (Self inflicted) As originally built, it could be touchy. I added vertical tail area with some packing tape, and it was pretty much locked in from that point on. With the same wing on a new fuselage and a new V tail that had the same area as the old one plus tape, I couldn't get it to stay in the sky. Maybe the tape was a figment, with enough flexibility to stay out of the way? I gave up on that set up and stuck an all-sheet V tail on it. I went to the field with a pair of scissors and chopped the heck out of that thing until the model behaved. It worked, but I was pretty astounded at how small it got before the model started behaving. With a new built up V tail, it's now as reliable as before the intervention by **Dorkus**. I don't dare wind it up all the way on our little field. **McCombs** sez that a larger prop is another way to reduce the effectiveness of the V tail. Hung only knows what other problems that opens up...

I read an article on F1G Coupe' models about using PGI trimming (essentially a simpler locked down model rather than all auto surfaces) that referenced a bunch of work done by Jean Wantzenriether in the 70's and 80's. On fin size, it said in order to ensure a full climb throughout the power run the fin must be of the smallest size possible - just large enough to prevent dutch roll, otherwise the model would hook to the right and flatten out rather than continue a steady right spiral climb.

Good insight. I think that is one of the reasons the Fokker. DVII is such a competitive ship for so many. I know from experimenting with mine (built from the (static) plan) that the fin and rudder area is so very close to the lower Dutch roll limit.

I've never paid much attention to fin size other than making sure it is somewhere between large - spirally unstable and small - dutch roll... think I may be looking a bit harder now.

And that is my take-away from this too. I will be watching that fin area relationship more closely. On a scale ship, it may be difficult to make the fin significantly smaller, while the stab gets a bit larger. (static)'s (static) had both surfaces going in different directions: larger stab, and smaller rudder. I think one needs to be careful not to let the aesthetics get too far out of whack on a judged scale ship.

I was reading Haufman's book on the gliders and it is amazing how far those guys get into this topic for their designs. Bottom line, they just want enough to have the effect of direction like for a dart. I've come to believe that there's some wisdom in that idea for FF rubber too.

I realize flight stability is a complicated subject. I've had some misadventures. I scratch built a lot of models of my own design when a teenager. Many sported low amounts of dihedral. One of my early rudder only planes that flew well developed spiral instability when I moved the CG forward and increased the decalage. It suddenly developed the tendency to

go from level flight into tightening spirals in either direction. I didn't understand that until years later. Moving the CG forward increased the effectiveness of the vertical tail, keeping the nose pointed closer to the relative wind, reducing the dihedral effect....

Some years later, I had the privilege of hearing Carl Goldberg speak at my RC club a long time ago. Carl showed us a simple balsa glider. With no vertical tail, it flew fine. With a bit of weight added on one wing, it crabbed, but still flew fine. Carl added a bit of vertical stabilizer, and it spiraled in toward the heavier wing. What amazed me about the demonstration was that it flew straight with the unbalanced wing, as long as there was very little vertical area behind the CG.

I'm not clever enough to think of a way to calculate the *best* size for a vertical tail. I have to resort to a "cut and try" method. Mostly I just leave well enough alone if a model will fly ok with whatever was on the original plan, even if it's not optimal. Reluctant fliers get the whole treatment, and end up with what is probably a better set up than the models that started out flying happy.

We do indeed have to be careful that we don't destroy the scale look of a model with mods to the tail. The vertical tail is a *big* part of the profile of a ship. A little fudging on the size can slide by ok, but if major reductions are required I think you have to go with one of the other work-arounds. The old method was to put a soft hinge on the rudder and let it flop in the breeze, effectively taking it out of the equation. Double gurneys on the V tail look to offer some hope too. The flaps can be colored to match the airframe to make them less obtrusive.

I did some test flying over the weekend and had some success with the double gurneys. There were three

models with me that had all exhibited good flight potential, but were plagued by right spiral-itis. Two of them responded to the flaps like they'd been touched by a magic wand. Forehead slapping moment as I thought of all the time I'd wasted trying to tweak away the spiral

The third one didn't care one bit about those flaps. There was no change at all in the flight characteristics. Going in, I wasn't optimistic that they'd work on it because it has a V tail that (by eyeball engineering) looks to be on the smallish side. It was gliding without a hint of Dutch roll so I figured it wouldn't hurt anything to try. I ended up adding gurney flaps in various locations on the right wing/wings. I got a crabbing flight, and still had a spiral at the end.

I've been over this ship six ways trying to find a warp or misalignment to explain the problem, and it looks ok to me. Flies pretty good too, except for that last part. So I gave up on the flaps and pulled all of them off. One more flight to confirm that it was still spiraling, and then I

started messing with the stab. Ok, this ain't pretty and I'm not proud of it, but when I added a bit of "up" on the *left* elevator, the thing flew like it was supposed to. Please don't tell anyone...

Prop size does count against it as well, someone told me that the effective side area of the prop (for a 2 blade prop) is effectively the side view of one blade. I know that changing from an 8" pecks to a 8" high pitch carved unit is quite a significant change in area. Going back to what (static) said about Earl Stahl and the rudders being too large,

they were probably fine with the big hand carved wooden props they were using back then.

I was sticking some double gurneys on the V tail of one of the problematic models and a question came to mind. Does it matter where those little flaps go? I have put them near the rudder line in the past. Maybe they'd be more effective if they were at mid chord, or at the TE?

Theoretically speaking, right about where the "center of lift" might be on an airfoiled wing. What better place to destroy lift/effectiveness?

In preparing the (static) last night, I mounted small 1/32 sq balsa gurney flaps to either side of the rudder hinge line as discussed recently in this forum. The (static) has always frustrated me over the years spiraling readily to either the left or right. I attributed this to the highly tapered, pointy wing planform. That said, the model was light, and when it did fly it could uncork some nice nimbus-nudging flights. I do believe that the rudder gurney flaps worked for me today, because while the model would still drop a wing and turn tightly to the left, it was damped some and I could use opposite rudder tweak to flatten the turn without driving the model into a right spiral as so often had been the case before. So thought I'd share this empirical evidence from the field on this spiral instability management technique....



Dan Driscoll's 1935 Famous Billy T.

photo: Pat Daily

SUMMER FLING AT THE SPRINGS The Indoor Meet in Highland Springs , VA

By Ace Reporter Wally Farrell

On Saturday June 24th, there was an indoor meet held at Highland Springs High School in Virginia, hosted by HSHS teacher **Billy Batkins**. You may have seen Billy at the NBM meets. His team of students is entered in the Nashville TSA (Technology Student Association) Nats indoor model airplane events. Several of the students were there flying and doing a great job of it! **Mr. Abram Van Dover** helped to run the actual mechanics of the meet, sort of a mixed TSA/ AMA / FAC thing, and we thank him for that. It goes without saying that Abram has made a lifetime commitment to Free Flight and this was just one in a long line of CD duties he has done over the years.

Several other Maxcuters were in attendance, including **Doug Griggs, Glen Simperts** and **Dave Mitchell**. Brainbusters **Mark and Reggie Batterson** were there flying up a storm with their indoor ships. CAFFA stalwarts **John and Shay Diebolt** were up from NC; John was looking to complete the 3 wins he needed to get his Blue Max.

Dave and I arrived at the same time and set up a table together. I, as usual, had more planes than I could actually use, and spent most of the day struggling. I went for an official with the ONG Continental dimer—28 seconds. Not having a pencil, I jotted the score down on my iPhone. I tried more unofficials but was at risk of ruining it since it kept hitting stuff, so I put it away. Turning to my 3 no-cals, I just couldn't get them trimmed either. It was amazingly frustrating.

I have never seen anything like I saw with Dave's flying however. He fired up his internal flying computer and quickly started packing in winds and getting quality flights. Being a second generation flier and having been swaddled in Esaki at birth apparently gave him unerring levels of insight and analysis for matching plane/prop/rubber to the site. He even *almost* gave John Diebolt a run for his

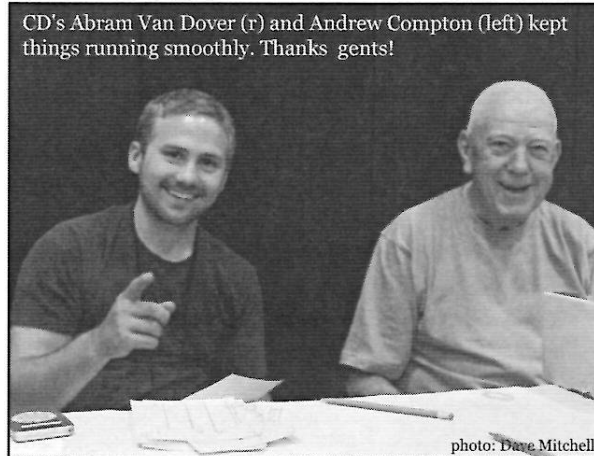
money in a couple of the events. (Ed. disclosure: Mr. Farrell was certainly not paid handsomely for the preceding paragraph.)

There was a ML for peanut scale that may have made history. My cub was doing about 40 seconds and not hitting the wall...my only real flier all day. Doug, Glen, Dave and I lined up and launched for the first heat. Dave hit early and my Cub was last down. OK, here we go I thought I have a shot at this....the second heat....three! two! One! Launch!....boom, my Cub goes hard left and touches a wheel, Glen is a second behind me and Doug 2 seconds behind Glen for the win. Total winning flight time I believe was 5-6 seconds. And you thought dorking was only possible outdoors....

John's Boo-Ray and Dave's Helldiver were in a great NoCal final. John's ship had one of THOSE props, moving slowly, hypnotically....Dave's ship was faster moving, but still just would not quit. It was really fun to see the two of them duke it out. In the end, John took the K, preserving his reputation as the man to beat.

As the day drew to a close, John had 2 wins. He also had the best time in Dime Scale, but there didn't appear to be a 3rd entry to make it "legit". Wait..it turned out I had not entered my first ONG time, and remembered it was still on my iPhone! I got it in just in time to make it official, and for him to get the 3 K's! Well done John!

Many thanks to Billy for setting up the meet and for all the retrievals during the day. Thanks to John D. too for getting out his retrieval pole so often to help everyone!



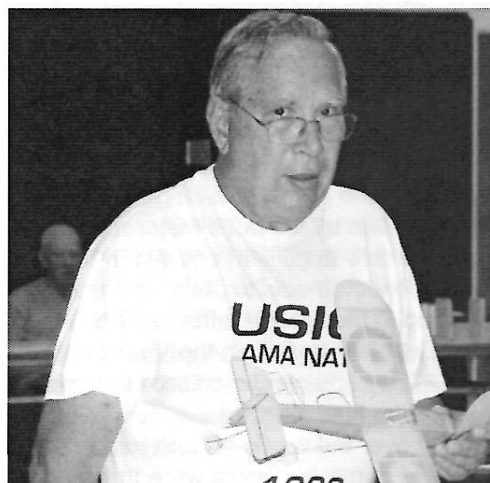
CD's Abram Van Dover (r) and Andrew Compton (left) kept things running smoothly. Thanks gents!

photo: Dave Mitchell



photo: Glen Simperts

John D.'s Boo Ray passes by at a glacial pace



-WF

John Diebolt prepares to unleash his B.A.T. Monoplane on an unsuspecting populace.

photo: Glen Simperts

Doug Griggs clearly enjoying his Hellcat No-Cal.

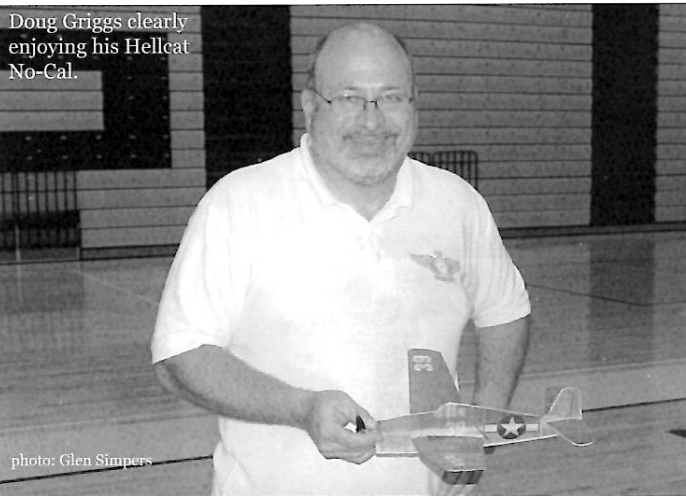


photo: Glen Simperts

Troy Bryant watches as his TSA indoor model executes a perfect ROG



photo: Van Taylor

Dave M. eschews prop(er) technique; Wally Farrell pretends not to notice.

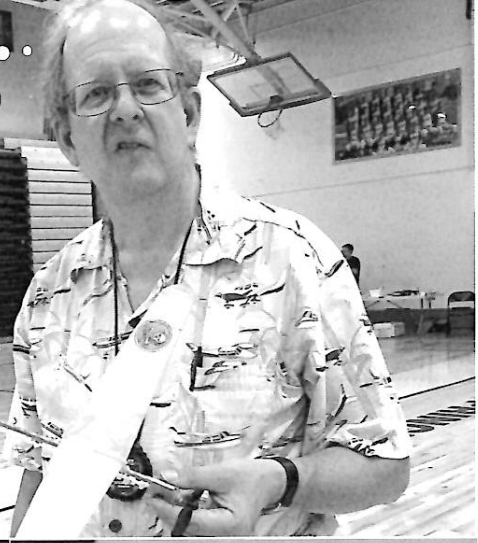


photo: Glen Simperts



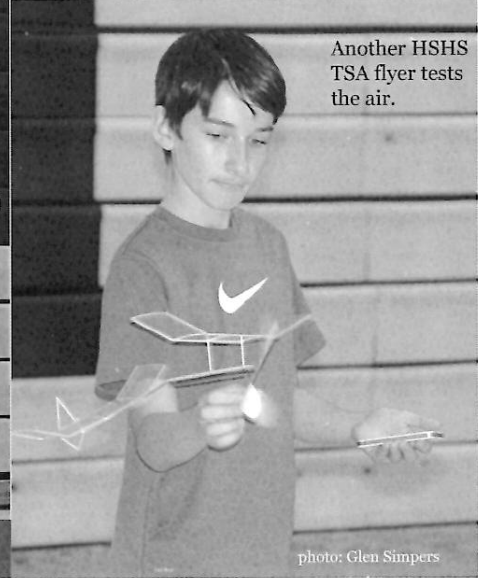
Pres. Simperts, figuring it all out.

photo: Dave Mitchell



Billy Batkins and his heroic team of Highland Springs TSA Aeromodelers, L-R: Thomas Schill, Billy Batkins, Troy Bryant, Van Taylor

photo: Dave Mitchell



Another HSHS TSA flyer tests the air.

photo: Glen Simperts

Photos from the Summer Fling at the Springs, held in the larger of two gyms at Highland Springs High School. Our contact at HSHS, Billy Batkins, has indicated that he plans to hold another contest in this gym on November 13th. It's a fine site for some indoor fun--while the ceiling is not clear, nor nearly as high as the NBM, it's high enough to allow for good competition, and wider. All in all, not a bad trade-off, and with the NBM becoming increasingly unwelcoming and restrictive, we could certainly use some new indoor sites! Billy's team of flyers are participants in the **Technology Students Association (TSA)**; find out more at: <http://www.tsaweb.org>

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% Dave Mitchell
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Indoor Fling at the Springs Report

Jet Cats: History, Thoughts and
6 Plans

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MEMBERSHIP, DUES

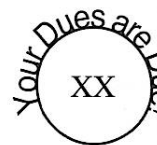
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RENEW ON LINE!

Go to www.dcmexcuter.org and click on
MaxFax at the top of the page.



UPCOMING EVENTS

Local: Every Wednesday,
12:30-2:30
Indoor Flying at Bauer Center
14625 Bauer Dr, Rockville,
MD 20853

Oct. 8-9
CAFFA / Kudzu Flying Corps
Hurricane Event
Raeford, NC

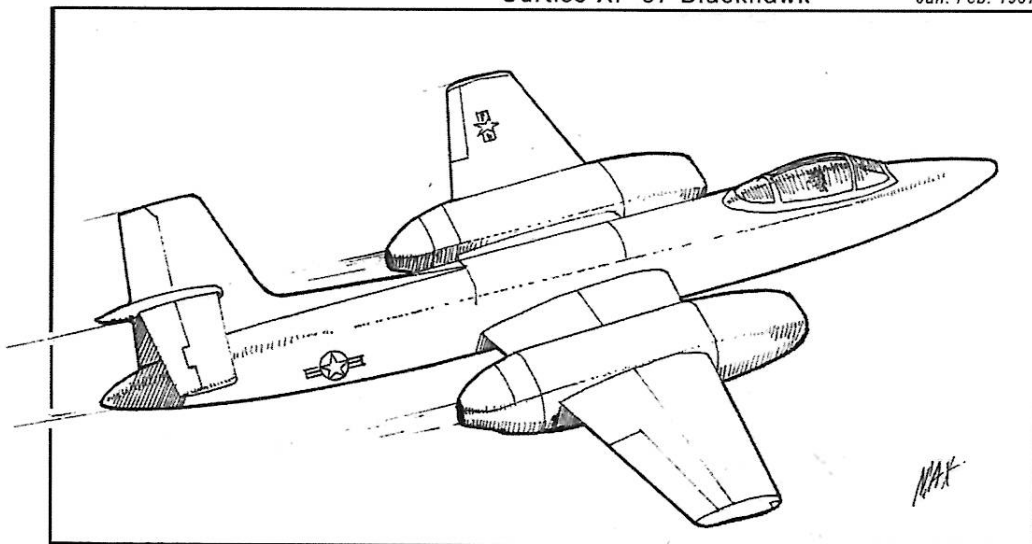
Oct. 22-23
Barron Field Air Races
Wawayanda, NY

Nov. 6th
FAC 50th Anniversary Meet at Pinkham Field
Durham, CT

Visit www.dcmexcuter.org and
www.flyingacesclub.com for more contest information!

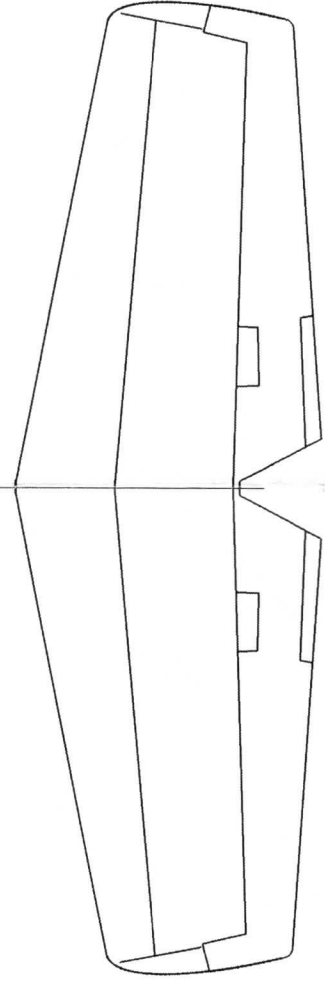
Curtiss XF-87 Blackhawk

Jan. Feb. 1987

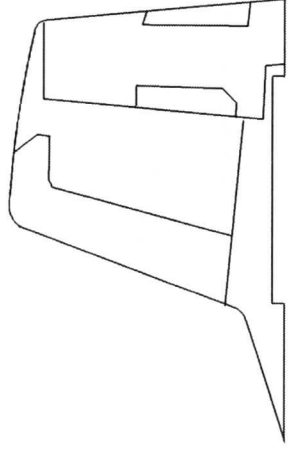


A sample image from Don Srull's new book, *Cover Art from MaxFax*. See page 2 for information

1/20" C grain balsa
Sand a taper to 1/32" at
the TE and tips



1/32" balsa



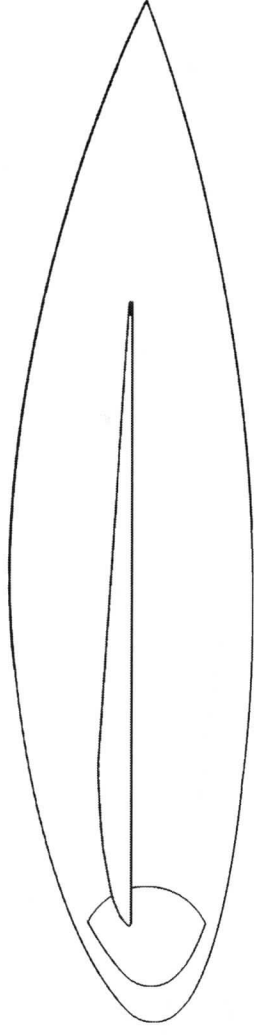
Lower part of fin is part of the
fuselage. Sand a slight angle
on top to give the stabilizer about
1/8" of tilt, left side high for left
circling flight.



Make the fuselage from
3/32" stock or thicker.

The engine intake pods can be drawn on,
or made as a separate piece to reinforce
the fuselage / wing joint.

Use heavy gage wire (you're going to need nose weight anyway)
and secure it with thread or tyvek.

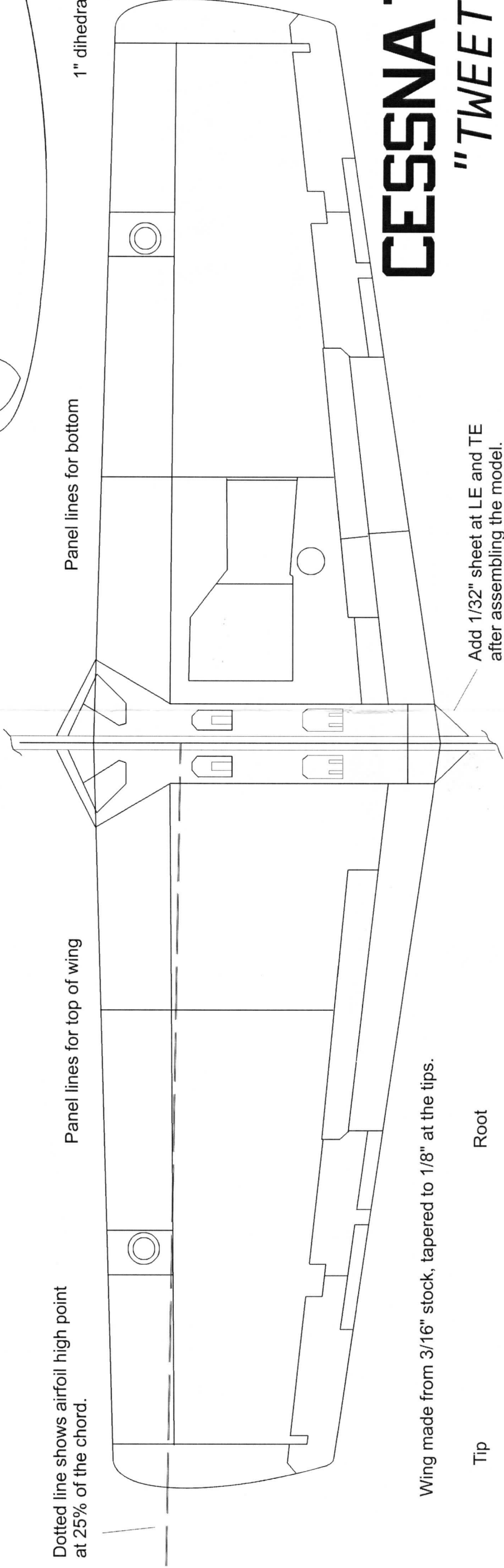


Dotted line shows airfoil high point
at 25% of the chord.

Panel lines for top of wing

Panel lines for bottom

1" dihedral each tip



Wing made from 3/16" stock, tapered to 1/8" at the tips.

Tip

Root



Airfoil is flat from the high point to the TE.

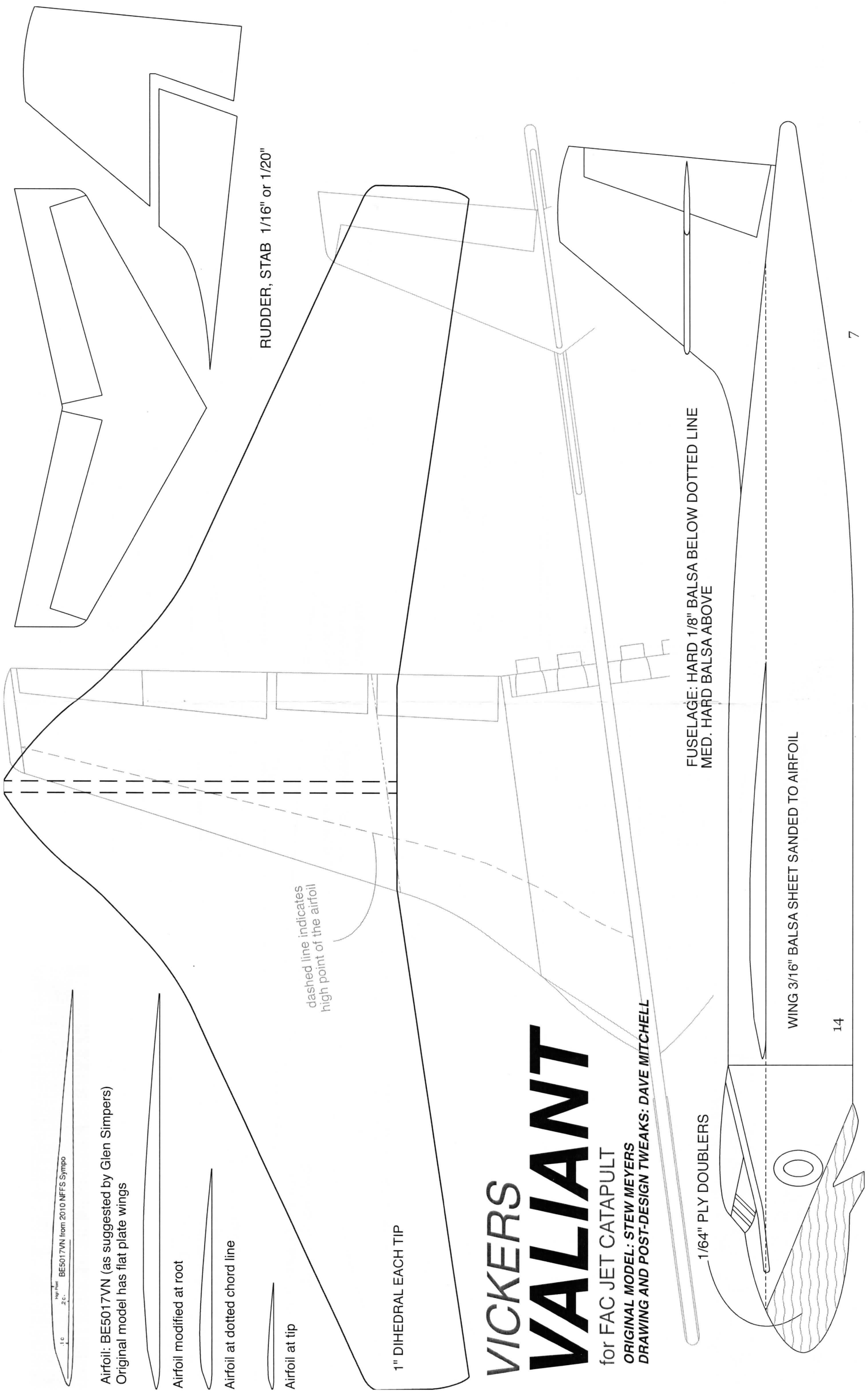
8

CESSNA T-37

"TWEET"

Jet Cat 14 inch span





1/4" BE5017VN from 2010 NFFS Sympo

Airfoil: BE5017VN (as suggested by Glen Simperts)
Original model has flat plate wings

Airfoil modified at root

Airfoil at dotted chord line

Airfoil at tip

dashed line indicates high point of the airfoil

1" DIHEDRAL EACH TIP

VICKERS VALIANT

for FAC JET CATAPULT
ORIGINAL MODEL: STEW MEYERS
DRAWING AND POST-DESIGN TWEAKS: DAVE MITCHELL

FUSELAGE: HARD 1/8" Balsa BELOW DOTTED LINE
MED. HARD Balsa ABOVE

1/64" PLY DOUBLERS

WING 3/16" Balsa SHEET SANDED TO AIRFOIL