

Radio Controlled Soaring Digest

November 2017

Vol. 34, No. 11



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Front cover: Adam Fisher's Estrella awaits launching at The Bluff, South Australia. Photo by Adam Fisher.
ZTE Blade A475, ISO 124, 1/2953 sec., f2.0



4 Cubfish

Jim Riggle crosses a Piper Cub and a Brook Trout and creates a one-of-a-kind slope soarer.



Puffed Mini-Blade

Sometimes a repair makes things worse, and fixing a poor repair requires a creative mind, a few specialized tools, and persistence in overcoming the uncovered obstacles. Philip Randolph.

19



16

Slope Soaring Candidate Grumman F11F "Tiger"

Credited with being the first fighter using an "area-rule" fuselage, the Tiger was an aircraft with record-breaking performance.

Back cover: Gavin Tilson captured this image of his Dream-Flight Weasel at a local Perth slope following a morning soaring session and just before the rain came through.
Apple iPhone 6s, ISO 25, 1/610 sec., f2,2, 29mm (35mm equiv.)

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Managing Editors, Publishers Bill & Bunny (B²) Kuhlman
Contact bsquared@rcsoaringdigest.com
 http://www.rcsoaringdigest.com
 Yahoo! group: R/CSOaringDigest
FaceBook: <https://www.facebook.com/RCSOaringDigest/>

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In the Air

A very small edition this month, but one which we hope readers will enjoy.

Our sincere thanks to Jim Riggle for leading us to his Cubfish thread on RCGroups. We can't recall any previous *RCSD* build article which reads as though it was formulated as a Monty Python skit. Despite the odd plot-line, there are a few points which may be great leads for other builders. We're thinking specifically of the methods Jim used in forming the foam "fuselage" and the rather unique covering material. Naturally, this is all illustrated with a large number of color photos.

Philip Randolph made the ferry trip across Puget Sound to visit us a while back, bringing the "repaired" right wing of a 60" Blade he had received through a Seattle Area Soaring Society raffle. That initial repair used expanding foam, and a large segment of the wing was puffed up from the leading edge to the spar. After a long discussion, Philip decided to take the wing back home and have a think about possible solutions. Before we knew it, Philip had sent in the article which begins on page 19. Hopefully readers with a similar problem will glean some insights into what should and should not be the methodologies for future repairs they may find needing to be done.

As always, *RCSD* relies exclusively on materials sent in by readers, so if you come across any information which may be appreciated by fellow readers, please let us know. Our email address is <bsquared@rcsoaringdigest.com>.

Time to build another sailplane!

OUR FISH

Jim Riggle, jim@jimriggle.com





Usual conundrum for me, where to begin? Were this a build log for some sort of normal airplane it would be easy, “throw some servos, glue and motor in the box, shake it a bit and out comes and airplane RTF...” not so with a Cubfish!

First you have to conceive them and then build them... So, don't know whether to start with conception, flying or building. But think, for this part of the story, will start with the finished fish (photos on the title page and above) and then go back to conception and building.

So, on to conception...

I'm an unabashed Cubnut!

I love Cubs... have been modeling them for 40 years and loving every flight I've ever taken in one whether I was in it or on the ground piloting it. And, “yes” I do have some other aviation interests but all of my interests seem to center around Cubs

and all the variants that have been created over the years, including the rather peculiar TG-8 and way more well know Taylorcraft.

So, here's what happened:

Woke up to a Cubfish swimming around in my head at 3 one morning... trying to figure out how I was going to successfully “breed” a fish and a Piper Cub.

I'd guess he won't leave my head until he's airborne and immortalized in stories?

Where do Cubfish come from anyhow?

...from dinner at the Cowfish Bar in Lander Wyoming. Was just sitting there minding my own business having a nice steak and a couple of beers when, all of a sudden, Cubfish pops into my head! No way of stopping him, just all of a sudden there he was!

Am sure it had something to do with reading the “Legend of the Cowfish” on the back of the menu, about how some wranglers started seeing cowfish disappear into the local streams and ponds. Took them many years to lasso one.

The wranglers were actually embarrassed about what they saw, afraid to admit to their fellow cowboys these aspirations of fish with cow heads! They’d see them, and like a mirage, they’d disappear. Who’d believe their visions until they could actually rope one and get it on the grill?

Ranchers dismissed the stories as nothing more than the lore of a bunch of drunken cowpokes.

Well, the day finally came when one wily cowboy snuck up on a grazing cowfish and, before the cowfish could disappear into the Appapogi, lassoed him.

Now that was just the beginning of the cowboy’s troubles because, once you lasso one, they put up a hell of a fight! You’ve seen those movies of fishermen catching sailfish off the coast of Baja, that’s the sort of fight a cowfish puts up. After all, what cowfish wants wranglers to know just how good they taste?

Well, it requiring a superhuman struggle to keep the cowfish out of the pond, taking him down and tying him up was like having a bulldog’n rodeo right there on the range.

In any event, once tied up and away from water, the cowboy headed back to the ranch with the cowfish tied over the saddle, him walking the horse along, quite weary from the struggle. Only thing he had to work with was horns and fins! Had he spent any time fishing, he’d have known how to handle all those darn fins.

Nonetheless, he got his cowfish back to the ranch to the amazement of all the other buckaroos. After the shock wore off, they pretty much knew what to do. Built a fire and let it burn down to the red hot coals, then grilled and ate cowfish, opening a whole new chapter in gastronomical delight.

I don’t think the Cubfish I have swimming/flying around in my head is going to be any sort of meal though. I suspect he’s going to be some sort of flying/swimming adventurer. Think he’ll have the personality of showoff like Evel Kneivel, Harry Houdini or a Michael Jordan. Haughty... but I really don’t know yet.

Only way to get him out will be to create him, get him in the air and see if I can keep him from disappearing in the closest stream or pond.

On to the nuts and bolts or “foam and fins” of the build

Place to start is with the Cub you plan to cannibalize to build your Cubfish.

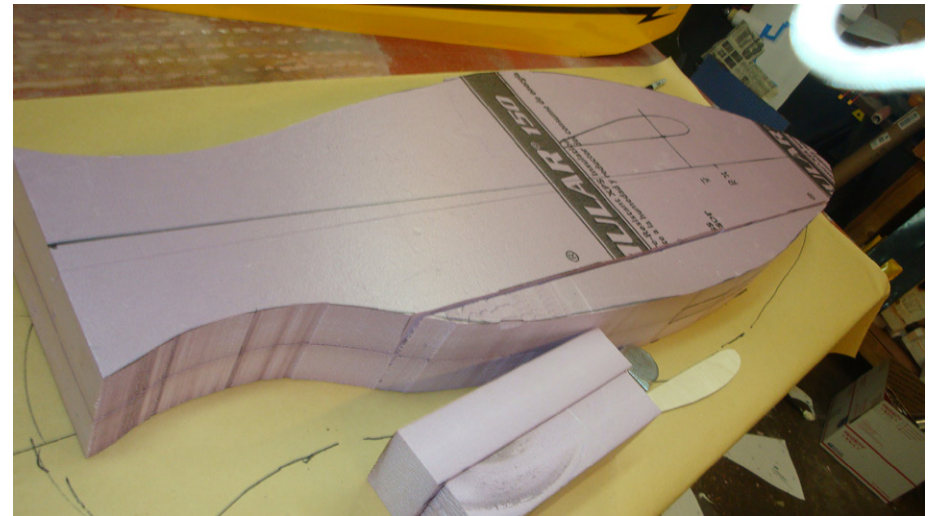
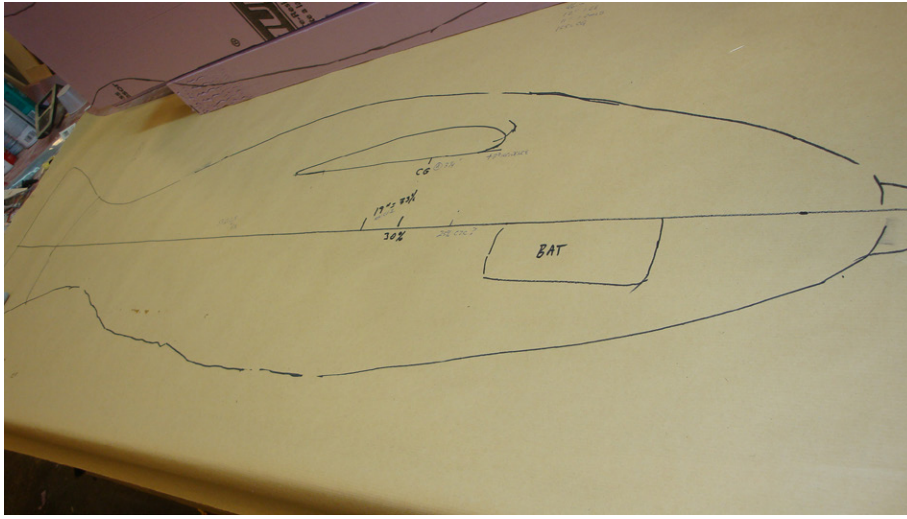
CF III is from a Hanger 9 .40 Cub, so took the fuse and laid it out on butcher paper. Did the same thing with the carwrap graphic/covering I was going to use. Carwrap needs to be sized to the fuse so that you’ll get an airplane of approximately the same configuration as the Cub you’re working from. All you’re really doing is to replace the fuse and fin.

I got a 4'x8' sheet of pink insulation foam from Home Depot, and after having sketched the shape out on butcher paper, transferred that to the foam and cut it out.

Foam comes 2" thick and I glued two sheets together. Glue it with very light epoxy or carpenters glue. If you use too much epoxy it will hang up the hot wire you’re going to use to shape it.

Having built two of them now, I’ve yet to get the covering quite right as I didn’t figure out the circumference of the fish exactly. Subsequently, had a gap down both top and bottom.

It’s just a “fantasy fish” though, so simply painted the gap and camo’ed it with green and black and it went away, but would be nice to have it match better.



Wing saddle but first, rough shape of the plug

These pictures are of building CF II and I suspect are reasonably self explanatory. Know you'll ask if I don't make any of this clear.

Two things I wanted to show with them are the process of conceptualizing the plug from picture to rough form.

Also wanted to show the foam cutter. Unfortunately I've lost the address for the site where I found the transformer and instructions on how to build it, darn, because the guy there was super in telling me what/how to do it. Think the total cost was



Ok, wing saddle and incidence angle

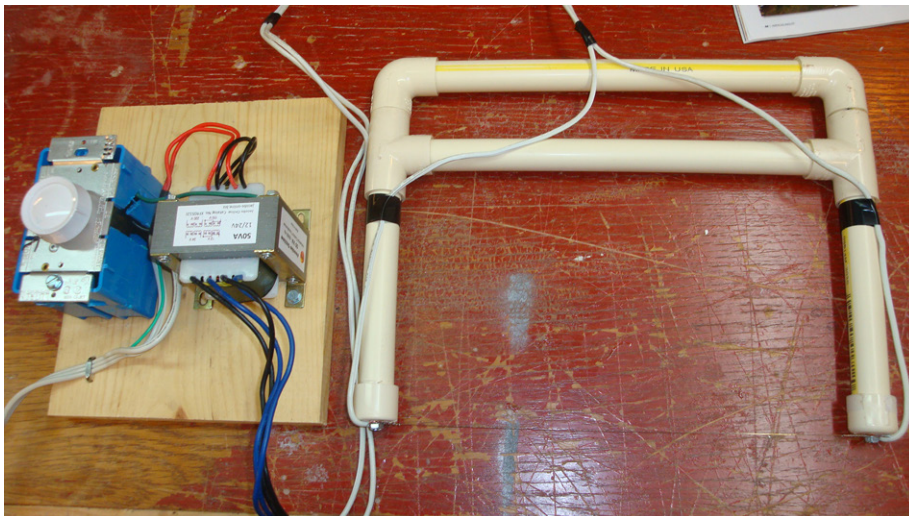
You'll note some markings on the foam.

What I did was to calculate the position of the wing as a function of where it was on the H-9 airplane. Was advised it needed to be 25-33% back from the nose and then an angle of incidence of 3 degrees, as I recall. Check that out before you start cutting!

My plan was to cut out a section of foam and then connect the wings to it. Didn't work out that way though... what happened was that I took the center section I'd cut out, trimmed it down by the width of the plywood I was working with, and glued the plywood back onto the plug then reinserted the plug back into the fuse.

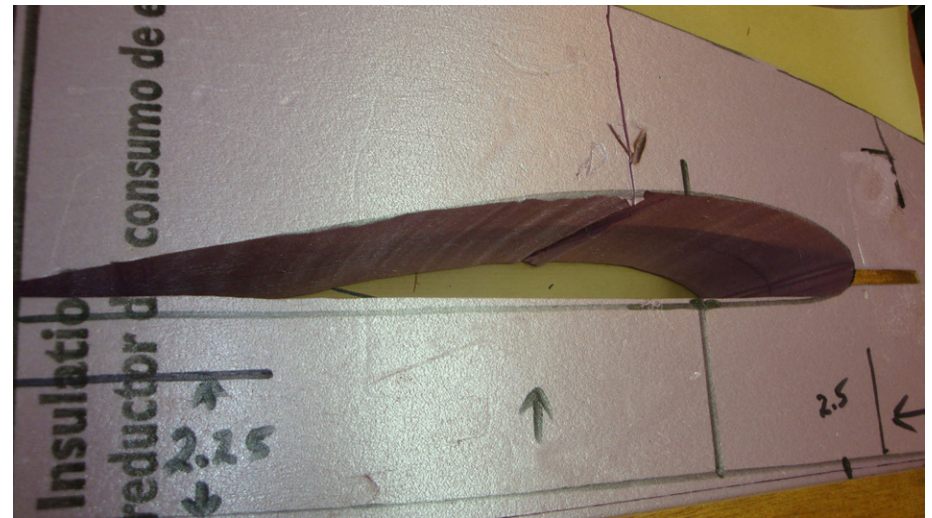
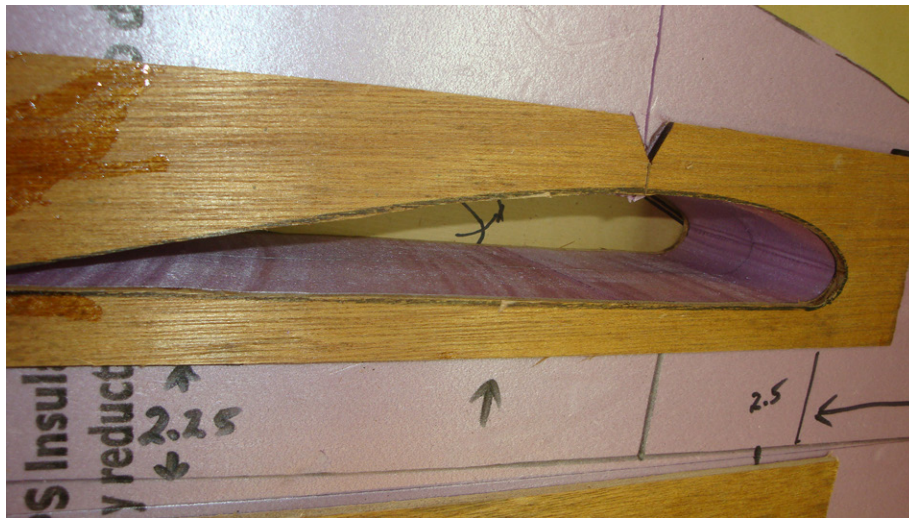
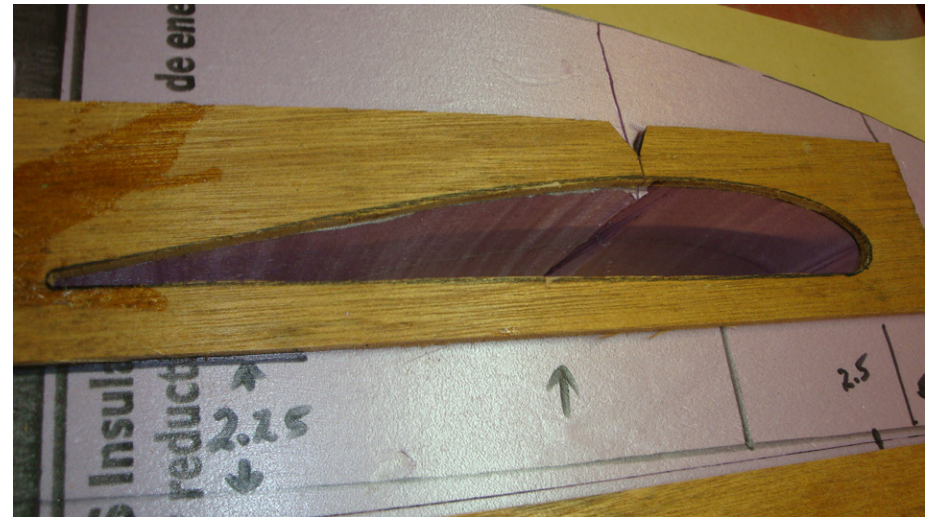
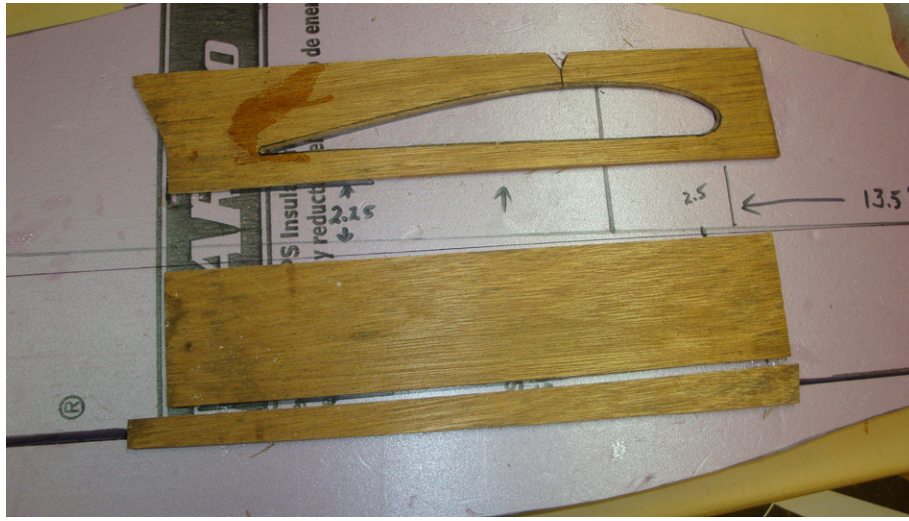
Next issue was locating the wing rod. Simply calculated the location on one side and drilled it out. Estimated the other side and did the same. On the "other side" cleaned out the hole to "oversize" and then started shimming it until the wing rod was plumb.

THERE'S MAGIC IN USING 2 SHEETS OF FOAM... it's square!



but \$40! Works great with the light dimmer in the circuit, simply adjust it for how thick of foam you're cutting and how fast you want to move the wire.

Once the plug was rough cut with the band saw and hot wire, used an orbital sander to give it final shape. Patch the divots with a little sheet rock spackle.



All angles are 90 degrees and it's 4" thick.

Having laid the fuse on its side, you can use a square to locate things like wings and wing rods. You can sight down the glue joint to locate the fin... wonderful material!

And note that I glued templates to each side with a slit in the top of each. Ran the wire down and thru the opening and then

just followed the template. When done, withdrew the wire. Used a little epoxy to rejoin the fuse above the wing.

This area would eventually get a layer for fiberglass anyhow, so no real issue of structural integrity.



Shaping the fuselage

Makes a big mess and isn't without safety issues.

Most likely hazard to avoid is your wife! Don't do this in your living room! Don't do it in your garage either, nor your driveway. Do it in your neighbor's driveway or living room.

Although with the hot wire the most you can do is to burn your finger, with the sander you create a huge amount of dust that doesn't belong in your lungs. Best wear a dust mask!

If you used epoxy to glue the foam sheets together instead of carpenter's glue, when you cut it with the hot wire it emits fumes that can be quite toxic! Cut the foam with a fan at your back.

Trial balance

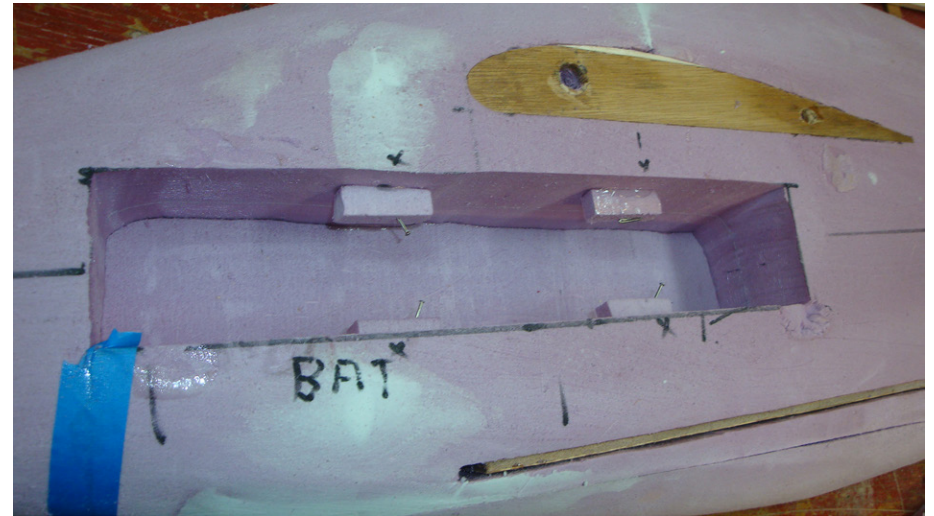
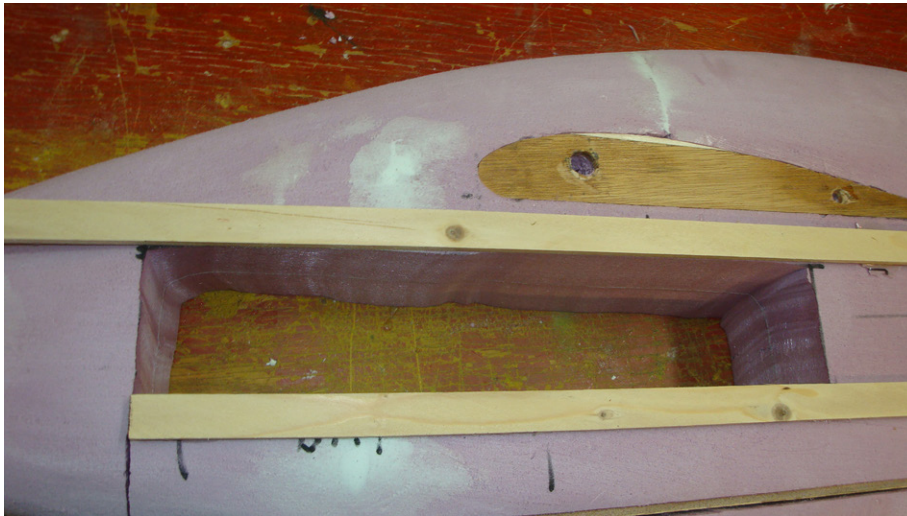
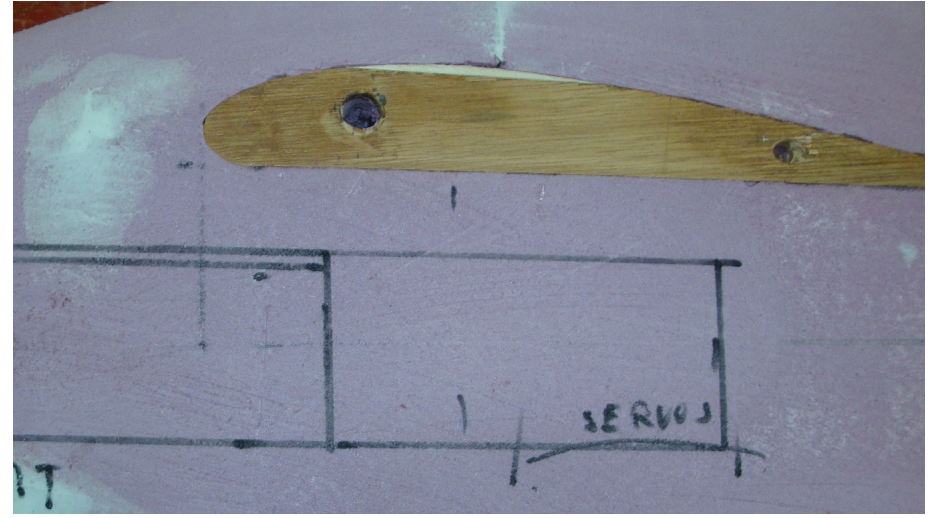
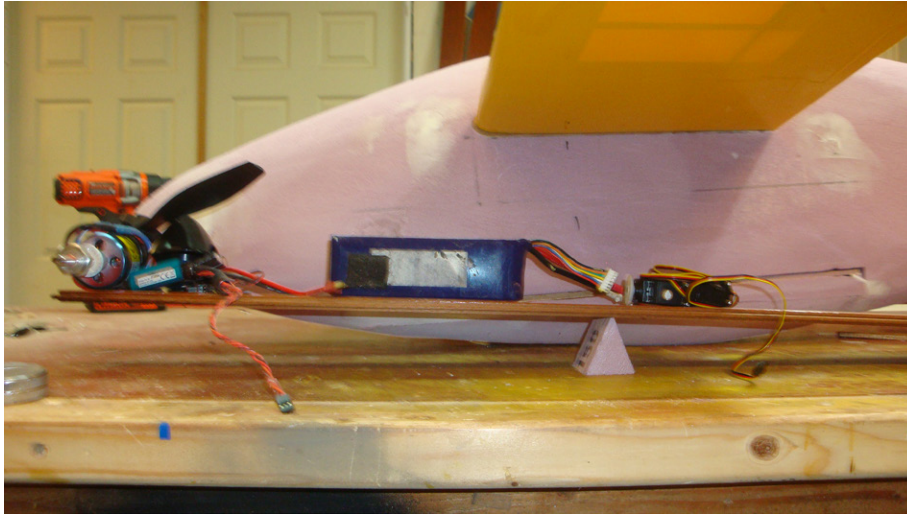
I don't know about you, but the most exciting flights I've ever had were when I was flying an airplane that was balanced wrong!

Never too early to start balancing your airplane!

Per normal, big issue was motor and battery vs. the weight of the tail feathers.

When I had it in the approximate location, simply took the hot wire and cut out the opening with a couple of templates. When I had the block cut out, took it to the band saw and cut off

Don't do this in your living room!
Don't do it in your garage either, nor
your driveway. Do it in your neighbor's
driveway or living room.

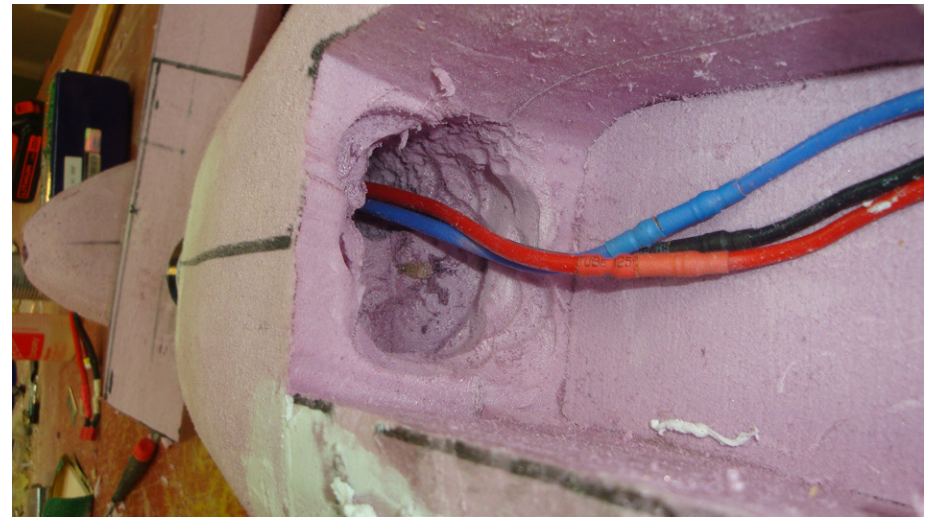
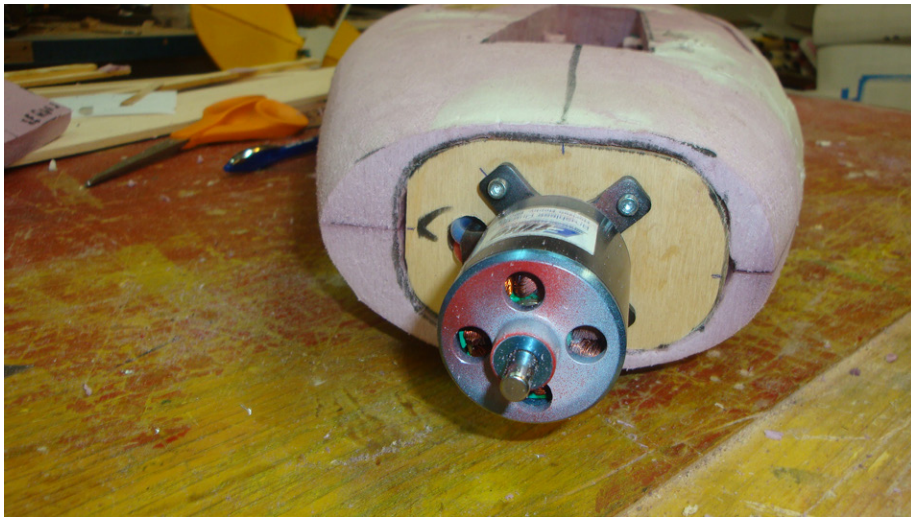


a slab about 1/4" thick and glued it back on the other side.
(Remember it gets glassed so structural integrity isn't going to be an issue.)

As it turned out I was about an inch off on the battery location and merely had to "hog out" a bit of foam with the Dermal tool to get the CG right along with about 5 oz. of lead.

Foam is just marvelous to work with!

What follows can best be described as "foam butchery"; hack out a little here, hack out a little there, cover your mistakes with a little spackle and then fiberglass and, unless you show your friends what a hack builder you are, they'll never know.

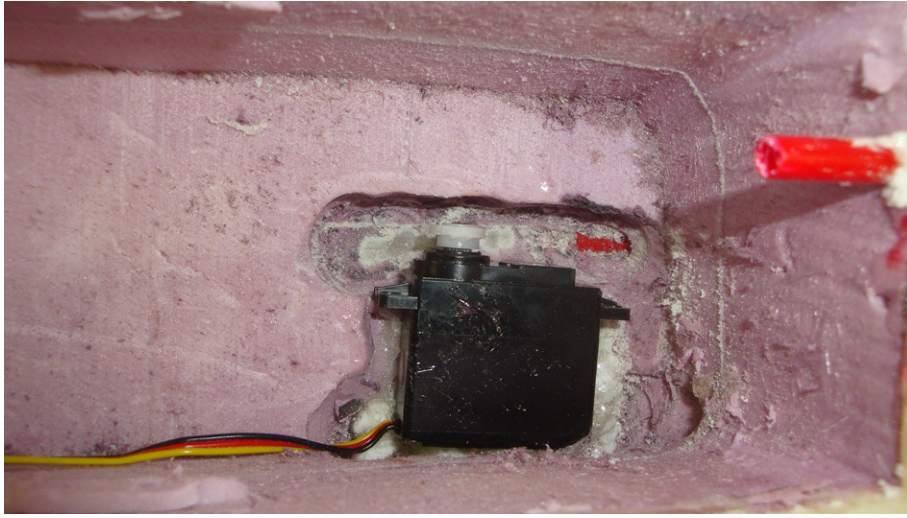


Back to the marvel of working with a material that's plumb, calculated where the firewall should be and cut it off square. (Didn't think I'd need any side or down thrust, and that guess worked out OK.)

Hacked in the push rods for the rudder and elevator, and you can see what a messy job I did of locating the elevator servo.

(Hopefully it won't ever fail.)

As to the fiberglass, used 3/4 oz cloth and, in retrospect, probably didn't need to use it. Certainly it's much more durable with it but, will it ever get flown enough that durability matters?



And, on the other side of the coin, does the 'glass add enough weight to matter? And the answer is that, having flown it, weight's not an issue at all.

Covering

When I built CF II, got the project to this stage and didn't know how I was going to cover/decorate it? One of the reasons I 'glassed it was to provide for a surface you could paint on. Just didn't know what I'd do.

Showed it to my flying friend Jeff Hickman, and he said, "go to Canby Graphics and have them print you some car wrap, you know, the stuff on all the cars and trucks for advertising." WHAT A GREAT IDEA!

Compared to installing your basic film converging, was a cinch. Took two us to get it properly located on the airplane but, after that, easy. Used a bit of heat in a couple of places but really quite simple!

As you can see by the photo at right, it's not the most graceful looking Cubfish in the ocean!



The Cubfish with optional floats for off-the-water flying. This view shows off the Canby Graphics car wrap covering to good effect.





And then flying at Cape Blanco in the natural environment of a Cubfish

The whole purpose of building these Cubfish is to generate graphics for stories about Cubfish.

One of the first stories will be set at the mouth of the Nehalem River. A scene where Larry Schoenborn of Fishing the West notoriety catches a Cubfish.

Might build a 36" version, a "micro Cubfish," and then a 1/4 scale out of some H-9 Super Cub wings I have.

The latter are the wings off a float-equipped Cub I lost in the surf at Lincoln City a few years back flying off the surf and, when I stalled the engine after a landing, I went out to retrieve the airplane and got knocked over by a sneaker wave, came within a moment of drowning! Were it not for a good Samaritan, I would have.

Wings with a history...



Slope Soaring Candidate

Grumman F11F "Tiger"

Built as a lightweight fighter, the F11F Tiger was a superior performing aircraft, capable of Mach 1.1. In April 1958, an F11F-1F Super Tiger, of which only two were built, reached an altitude of 76,828 ft., establishing a world record. In a more unusual episode, during a 1956 test flight, a Grumman pilot flying an F11F shot himself down by overtaking his bullets in a diving maneuver. Despite its performance, the Tiger's service life was short, as it coincided with development of the F8U Crusader and F4H Phantom II.

The origins of the F11F Tiger (redesignated F-11 in 1962) can be traced to a 1952 Grumman effort to modernize the company's F9F-6/7 Cougar. Yet, in final form the aircraft departed sharply from its predecessor. Designed as a lightweight fighter, the development model of the F11F, first flown in July 1954, featured thin swept wings, incorporating spoilers instead of ailerons, coupled with an area-rule (coke-bottle shaped) fuselage design that enabled it to exceed Mach 1.

The F11F-1 test trials produced one of the most bizarre flights in aviation history when a Grumman test pilot managed to "shoot himself down" with his own bullets. Firing the guns in a dive, the trajectory of the bullets allowed him to overtake them on his pullout causing an engine flameout and a subsequent forced landing.

Initial production F11Fs were delivered to the Navy in March 1957. In spite of its design performance profile, the Tiger saw limited service, its appearance coinciding with two of the most capable fighters of all time, the F8U Crusader and F4H Phantom II.



Such was their capabilities that the F11F-1F Super Tiger, which incorporated a more powerful engine that enabled it to achieve a speed of 1,386.47 mph in level flight and reach a world record altitude of 76,828 feet, did not enter production. Tigers finished their service in the Naval Air Training Command and as demonstration aircraft with the Blue Angels, who flew the F11F during the period 1957-1969.

Delivered to the Navy in April 1958, the Museum's F11F-1 (Bureau Number 141828) served with several squadrons, ashore at Naval Air Station (NAS) Cubi Point, Philippines, and with Training Squadron (VT) 26 before flying with the Blue Angels from 1967 to 1969, the last show seasons in which the team flew the Tiger.

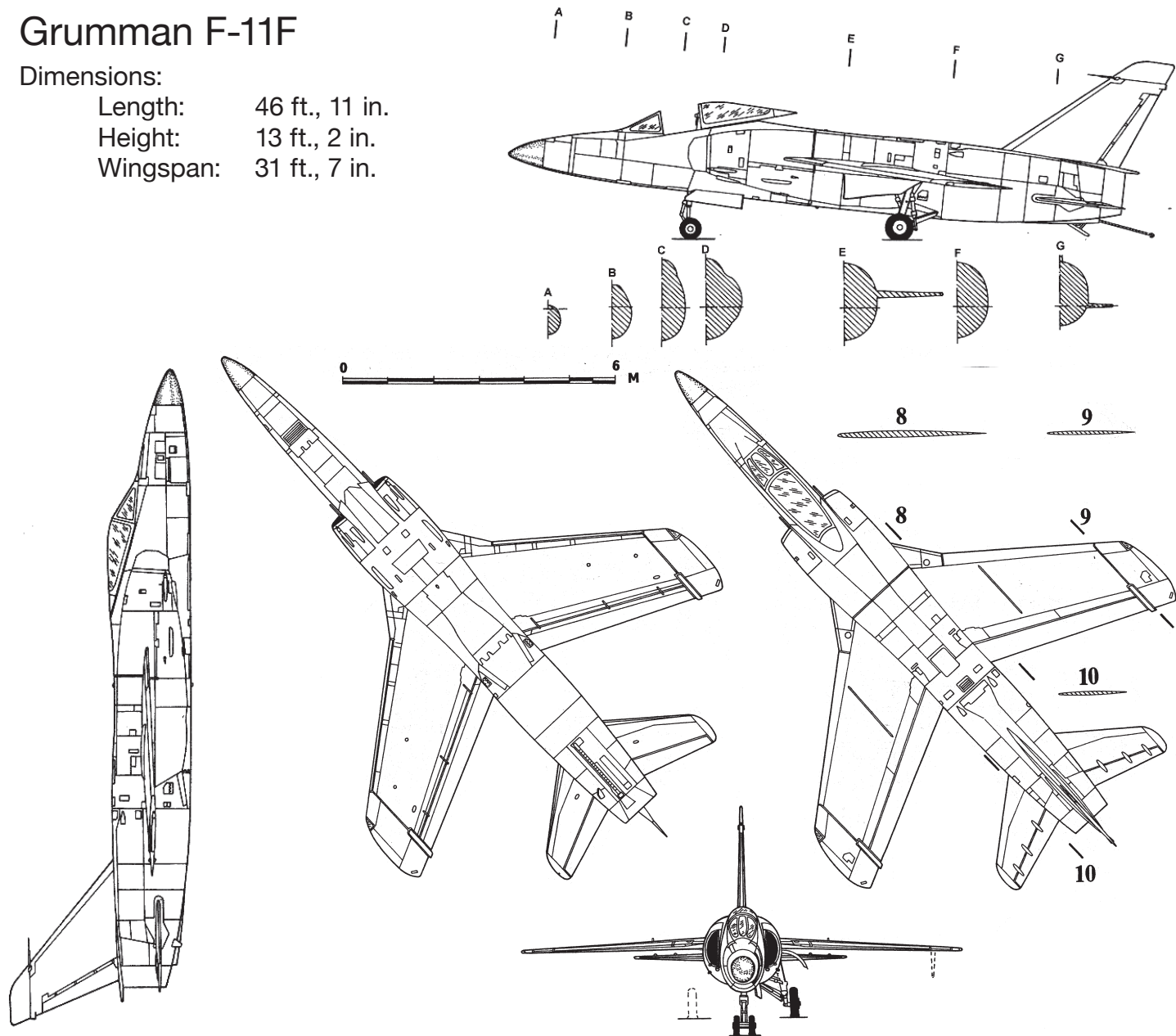
Grumman F-11F

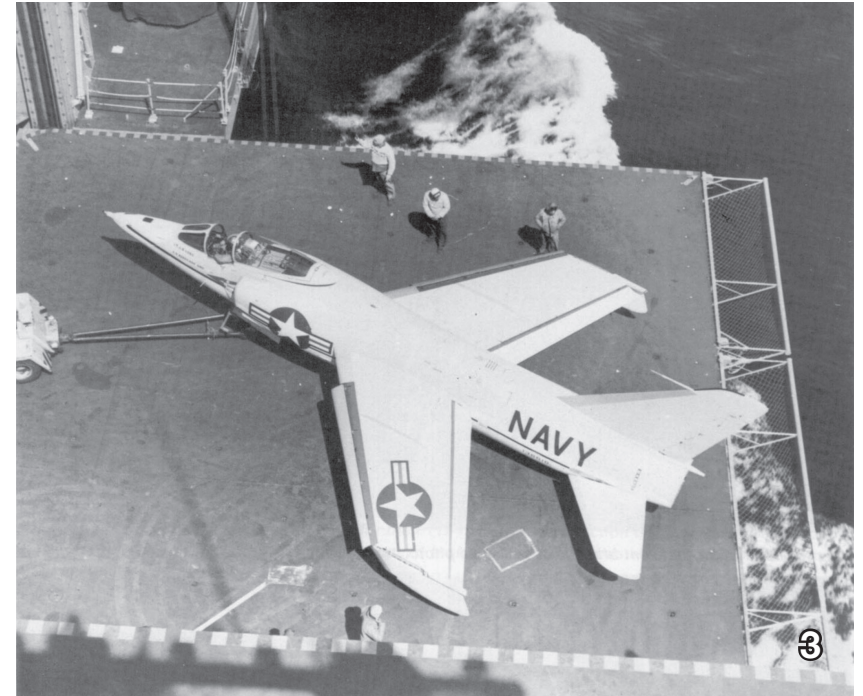
Dimensions:

Length: 46 ft., 11 in.

Height: 13 ft., 2 in.

Wingspan: 31 ft., 7 in.





Resources:

Main text: National Naval Aviation Museum <http://www.navalaviationmuseum.org/attractions/aircraft-exhibits/item/?item=f11f_tiger>.

Photo 1: <https://commons.wikimedia.org/wiki/File:Grumman_F11F-1_Tiger_in_flight_c1956.jpg>, U.S. Navy National Museum of Naval Aviation.

Photo 2: <https://commons.wikimedia.org/wiki/File:F11F_Tiger_NATC_in_flight.jpg>, U.S. Navy photograph.

Photo 3: <https://commons.wikimedia.org/wiki/File:F11F_elevator_CVA-59_1956.jpg>, Official U.S. Navy photograph.

Photo 4: National Naval Aviation Museum <http://www.navalaviationmuseum.org/nnam/item_images/F11F.jpg>.

Plan set: Composite image from individual drawings available at <<https://www.the-blueprints.com/blueprints/modernplanes/grumman/>>, Grumman F-11F Tiger.



PUFFED

mini-blade

Philip Randolph, amphioxus.philip@gmail.com



Blade Sloper

2m Blade sloper with 72MHz Rx and battery pack. There's some damage to the leading edge on the right wing. Note the crease just after the D section and after the leading edge.

When a hollow-molded wing is inflated like a sausage with expanding foam... Gawrd the things they do.

It had been a case of an easily fixable bite out of a wing leading edge made disastrous by whomever then donated it to a Seattle Area Soaring Society raffle.

A gentleman earlier won his choice of upcoming raffle items. Through a bit of horse-trading I got it. But that was before either of us had seen more than its picture and caption:

From the photo (shown at left) I thought it looked easily fixable.

Not.

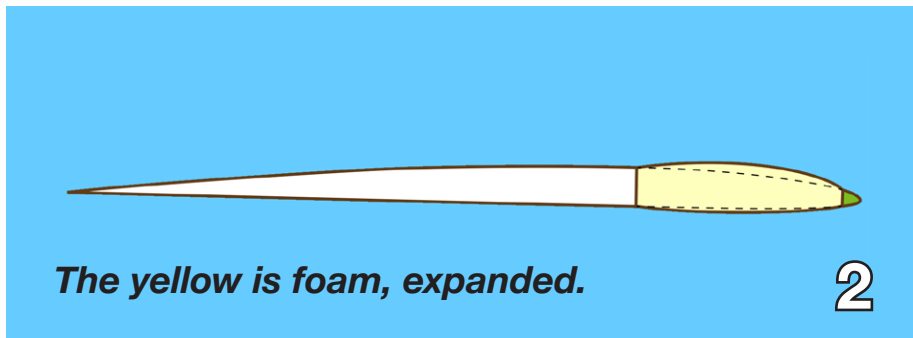
Well, I had also wishfully gotten it a bit mixed up in my head with a Carbon Bird I figured made its way from a great guy's estate to the raffle.

Not.

And glass, not carbon.

Nor was it a 2m Blade. It's a 60" Mini-Blade. Fast, 7%, thinned RG015. Curious though, how those usually sharp guys at SASS didn't tell the difference between 60" and 2m? That's okay – I like 60" planes.

But what they didn't say was that someone had tried to fix the little divot near the end of the wing by filling the whole hollow-molded leading 2" of D-cell with expanding foam.



The D-cell puffed up like a sausage to half again its original thickness. Hard as rock. In my grubby little fist it looked terminal. (See Image 2.)

I showed the wing to Adam Weston, who is an expert at 'glass repairs. He didn't have a fix.

A guy on RC Groups with a Mini-Blade offered to help me make a negative so I could mold a new portion and somehow glue it in place.

I stuck the plane in the closet for six months.

But then I got a cold. Odd the things one will and won't do when under the weather. I fixed it.

Photos show the process:

Image 3: I cut a slot to scoop out expanding foam. Solvents? Not much will dissolve urethane and would also eat the wing.

Image 4: First attempt at chewing out foam with a drill through the wing root.

Image 5: Coat hanger scraper, run through the slot and the hole in the wing root. Some of the foam chunks were hard, most soft.

Image 6: To get the shape back I'd heat-soften 4" and then clamp on a chilled ruler.





5

That worked, but left a weak, uneven surface.

I sloshed in a bit of epoxy for strength. Then I dripped in a small amount of Gorilla Glue, tipped it around until the inside surface was coated, and left it in a position where gravity would keep it in the right place.

The result: strong but uneven.

Image 7: Light spackle smoothed unevenness. Fiberglass blotted dry, covered with 3" PVC tape, pressured with foam, ply, and clamps. Tape glue works as a mold release. Wax paper works also. Simpler than bagging.

The bite near the tip is filled with sanded Gorilla Glue, spackled smooth, and glassed.



6



7



Image 8: Peeling the tape off the glass. The spackle smoothed the wing to nearly its original shape.

It will slope again.

Postscript: And it did slope again. Briefly. It flew great on a test hill, the flying bump at the entrance to Joe Watt Canyon, about a hundred miles east of Seattle. That's across the Cascades in the Kittitas Valley.

Joe Watt Bump is maybe 150' high. Grassy all over. Great place to test planes. The wind was about 30mph, with gusts, and very bumpy.

A gust? Pilot error? I nosed the project in.

It has minor damage to the wing root, and the glue holding the nose in place slipped. Easily fixable. But no more flying the Mini-Blade this day.



Image 9: The author with the repaired Mini-Blade and a 60" Birdworks Zipper at Joe Watt Bump in eastern Washington.

Image 10: The Mini-Blade and a Prodigy.



10

EC
SD

