Radio Controlled Soaring Digest

June 2006 Vol. 23, No. 6

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Front Cover: Dave Beardsley caught this close-up of Fred China's 1/4 scale Jacobs DFS Weihe during the April 2006 aerotow event at Yakima, Washington. The Weihe has a span of 4.5 meters, and is an entirely hand-built creation, constructed using Fred's own plans. Nikon D2H, ISO 200, 1/1000 sec, f5.6, 400 mm. A shot of Fred's Weihe flying overhead, and showing off it's translucent covering, is on page 11. For more photos from the Yakima meet, see Dave's article starting on page 4 of this issue.

Back Cover: Jay Decker captured Tom Evans' ASW 24 turning over Eagle Butte on a cloudless April morning. Nikon D100, 1/500 sec, f 11.0, 70.0 mm.

R/C Soaring Digest

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In the Air!

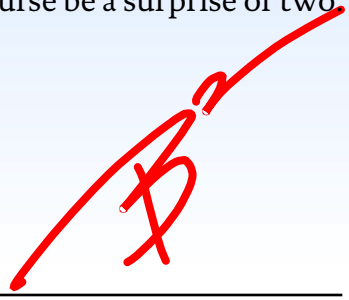
This issue of *RC Soaring Digest*, as usual, has an eclectic blend of topics and a plethora of exceptional photos. Our sincere thanks to all those who contributed to this issue.

If you're an *RCSD* reader with something to share with the RC soaring community, please contact us. We are always looking for materials to be published in future issues. Submission guidelines are available in PDF form from a link on the *RCSD* home page <http://www.rcsoaringdigest.com>.

Just as we were creating the PDF for this issue, we received a notice from FAI stating Jüri Laidna of Estonia had filed a claim for distance to goal and return for F5-P (radio controlled flight, electric motor, non-rechargeable sources of current) of 46.9 km. The flight took place between Laagri and Kaasiku, Estonia, on 13 May, 2006. Jüri holds the current record for this class with a flight of 19.92 km; Gary Fogel's flight of 30.44 km is still under review and thus remains provisional. We anticipate Gary's flight will become the official record before Jüri's latest flight is ratified. We also anticipate Gary will have already made another attempt at the record before the next issue of *RCSD* is published.

For next month, we're looking forward to continuing Chris Boultinghouse's Genie build and Phil Pearson's walk-through of the Encore kitting process. Jerry Slates will show the proper way to make up a hi-start, and there will of course be a surprise or two.

Time to build another sailplane!



April 2006 Yakima Scale Soaring

Aerotow!

Dave Beardsley, <dave@beardsleys.net>

Each year Gene Cope hosts a scale soaring meet at Disappointment Field just outside of Union Gap Washington, about 20 miles from Yakima.

"Disappointment Field" you say? Well, Disappointment Field is actually a full scale, private, soft-field airstrip, owned by George Glessner. The field is shown on your VFR charts as Wilkerson Airfield. It's become affectionately known as Disappointment Field as a sarcastic play on words. The lift at this flying site is amongst the best I've flown at — all across the country. One hour plus flights are not uncommon.

The full scale grass runway is about 2200 feet long, about 60 feet wide. If you can't hit that runway with your model glider, you might have to look for a new hobby. That said, in a strong crosswind the fence at the runway edge has been known to eat gliders, so pilots must pay special attention to cross winds during landing.

Approximately 25 pilots registered to fly over the three day long event. Pilots drove in from more than four hours away, many hauling trailers with large scale tugs and gliders. At $3.00 per gallon for gas, trucks hauling trailers for a four hour drive is a big commitment. Fortunately for those who attended, Disappointment Field did not disappoint – the conditions were well worth the drive.

On Friday the conditions were smooth through the mid-morning with thermals starting to pop as the day progressed. The sky never really got cooking; still a few 40 plus minute flights were turned in by many pilots.

By Friday evening, the forecast for Saturday was looking a bit grim, with 30+ knot winds expected starting mid-day.

We all raced to the field early Saturday morning in an effort to get our flights in before the winds kicked up. As the day went on, the winds never seemed to blow. By 2:00 pm many pilots had logged flights of 60 minutes or more.

The winds turned on at 3:00... As in 3:00 on the dot. It was as if we'd been standing in a huge wind tunnel and someone finally flipped the switch. It went from calm to flipping tents in less than five minutes. Luckily, the field owner, George Glessner, offers his full scale hangar for overnight "locked" storage, so many pilots made a mad dash to stow their gliders (still assembled) for Sunday flying. Once the planes were hangared, it was off to town for the event group dinner.

By the morning, the winds had calmed down and the forecast looked promising! The conditions turned on and hat sucking thermals we've become accustomed to joined everyone for an afternoon of unforgettable soaring. Sunday was the best day by far.

The photos tell the rest of the story. If you live close to Yakima, this event has become a "must attend"!

Thanks Gene and George for another great event!

Steve Dentz' 1/3 scale Wilga tows Fred China's 1/4 scale Weihe to altitude.

Dave Beardsley flew his all-molded LET Model 1/3rd scale Ventus-2c M. Yakima marked the maiden voyage of this 6 m model.

Don Bailey put in some very long flights with all of his models, including this 1/4 scale Schempp-Hirth SHK. The mass-balanced full-flying V-tail is a unique feature of the SHK.

Above: Fred China's 1/4 scale Slingsby Type 30 Prefect performs a well-shaped loop.
Opposite page: Russ Lee's LS7, spoilers deployed, comes in for a landing.

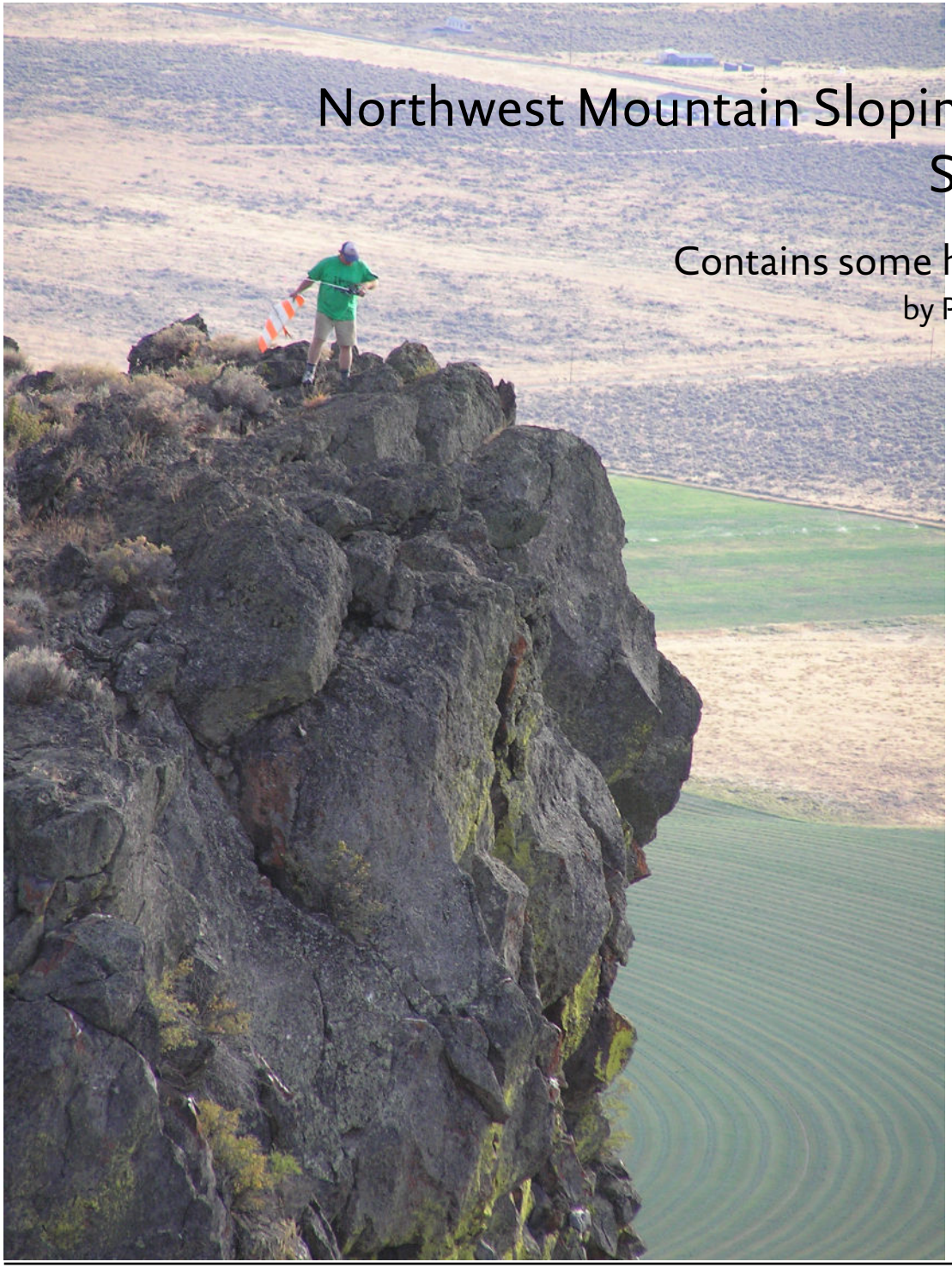
Andy Page put in some of the longest flights of the weekend with his 1/4 scale Ka8B, built from a Flair kit.

Fred China's 1/4 scale Jacobs DFS Weihe on tow. Even at 1/4 scale, this model spans 4.5 meters.


AS K21

This page: Steve Dentz launched a large number of sailplanes during the weekend using his 1/3rd scale Frisch Models Wilga. This tow plane is powered with a DA 150 powered engine. Steve's tow plane is not only huge, as can be seen in the photo at the right, but with its dummy pilot it's also incredibly realistic in the air.

Opposite page: Rick Helgeson's Rodel Model 1/4 scale ASK 21 from comes in for a landing. It's equipped with onboard avionics from Eagle Tree Systems.



Northwest Mountain Sloping, Somewhat-Social Slopers, Sloper Bio, and Slope Sites

Contains some humor, depending on your perspective

by Philip Randolph , <amphioxus@juno.com>

What you need to understand about somewhat-social mountain sloping in the Northwest is intrepid slope explorer Chris Erikson.

"Somewhat social" is a technical classification that ignores the silent majority of guys who mostly go out in groups of one or two. For example, Phil Pearson has flown nearly everywhere *up,* often accompanied by his charming wife Kitty or Adam Weston.

But if by "somewhat social" we mean "in hoards of three or four at a time, or even more," and by "mountain" we mean "up somewhere in the Cascades," the influence is Chris. Or was. Still is. Sort of.

Chris Erikson launching his Red Herring at Table Rock, central Oregon. Photo by Philip Randolph

Chris Erikson, with his flight safety engineer Forest, flying the Sheetrock at Round Mountain, north central Oregon. Photo by Philip Randolph

Chris and his family now live down in Lyle, near White Salmon, in the Columbia Gorge, where he works as video engineer for Insitu, the guys who built the Aerosonde, the first UAV to cross the Atlantic (design since sold), and who make the ScanEagle, a UAV that costs about as much as an upscale sports car.

"Intrepid slope explorer" is Chris's actual unofficial title, by frequent acoladeful repetition, for example, at slopeflyer.com. ("Intrepid," according to Onelook.com, means, "invulnerable to fear or intimidation.") Chris has been dragging some of the somewhat social slope trips down toward Northern Oregon or the Southern Cascades. But he's kept a loose (that's not exaggeration) group going that I keep calling "Chris Erikson's Wild Arsed Mountain Slopers," or, "CEWAMS." And he's been the major influence on where we fly.

Chris likes to throw things off rocks. This is because his father was a geologist. This also explains why to be on a slope trip with him is to learn some geology.

It doesn't explain how he identifies more stars than the first G. Bush's six or eight points of light, or why he recited the *Jane's Historic Military Aircraft Recognition Guide,* plane by plane, one evening after minor truck trouble, or why he knows all the wildflowers, personally, or at least on a first name basis.

But mentioning a geologic ancestor is as far as we should go into his childhood, because we all have our own childhoods to stay out of, or to relive, via toy airplanes.

For example, when I was one, I had a rubber hammer that I would throw off the bulkhead on Vashon Island. When I was one I couldn't afford radio controlled toy gliders, but I'm still throwing things off places. Freudians call this, "object constancy." A good feminist would say it's, "Peter Pan Syndrome," like, "Philip,

you play with toys." "That's good." "You never grow up." "Not if I can help it. You have beautiful eyes (for a feminist)."

Anyway, that's all by way of saying that the places Chris has typically gotten us to are mildly rocky, or rather rocky, or outright cliffs. See the photo on the opposite page.

Table Mountain (6000'), NE of Ellensburg, has two sites fairly near Lion Rock with passable landing zones. Is that where Chris got us to fly? Naw. He found us a precipice.

One weekend there, nine guys and about four wives and girlfriends, with Damian Monda cooking meal after meal like we were at a good restaurant... Well, the wind sheered and whipped three planes around a rather scenic prominence, a hundred feet above the rocks of a steep talus slope.

Chris's six-foot delta, "Sheetrock," basically a Red Herring on bovine growth hormones, lost a grapefruit sized chunk of EPP.

Darren Darsey's immaculate P-51 was lost for two weeks. Looking for it, I found someone's hand-launch vertical stab, well weathered.

I was having a good time dropping an EPP Snapper down across the trees and over the cliff. I got it a little low, so it went right down the cleft between a couple basalt knuckles, where the sheer was making a little typhoon. The thing involuntarily snap-rolled 360 degrees, but then it was in front of the cliff, in lift, rising up as if nothing unusual had ever happened.

An actually gentle mountain LZ, Naneum Ridge. Photo by Erik Utter

More rocks: Last summer Chris got us up to the west end of Divide Ridge, up the Naches, SE of Mt. Rainier. Gorgeous country. A beautiful meadow slopes gently off toward the east, with Yakima in the distance.

I had a great time flying a carbon winged Fun One there, till I crunched the nose pretty well, which I splinted with duct tape, and 'til the wind shifted.

So we all went to the other side of the ridge, to Jumpoff Lookout. Three-hundred

Philip flying a Javelin at Naneum Ridge. All sloper's present deny taking the picture, though the camera they deny taking it with was Philip's.

foot cliff, with a few hundred feet of steep talus below that. Almost no wind, but what there was drifting gently straight up. No chance of recovery, if down.

We all goaded each other until (out of some unmanly insecurity or juvenile need to prove myself or something equally stupid) I chucked my Javelin off a couple times.

Heading down, we got stuck in the middle of a cattle herd for an hour.

Better, way better, ten miles northwest, was Timberwolf Mountain, last August. We drove right up to 6391'. Great, relatively close views of Goat Rocks, Adams, and Rainier.

Our atmospheric scientist is Dave Carey. He explained, "When a high sits above the Cascades, cold air sublimates and flows down the valleys, to the east and west."

Timberwolf is a ridge that bends north, right in the way of winds flowing east down a few creek valleys. Timberwolf diverts the wind, steeply *up* its fairly clear, west face. A few rocks. Fantastic lift. Lift all over. There was even lift behind the ridge, where warm air slid up the backside, to join the frontside wind lift. Ridges often have updrafts on all sides, as in the Ionosphere picture on the next page, taken further South.

The EPP-only landing zones are a stunted turnaround, or a skinny grassy slope behind, or the trees behind. Michael Gore permanently landed a spanking new Combat Wing somewhere back there. Now he equips his planes with downed plane alarms.

Chris set up his video gear so we could all fly his Sheetrock (many times repaired) with virtual reality goggles. Erik Utter (who flies a Beech Bonanza) was great at it. He said, "It's just like IFR!" (Instrument Flight Rules) Damian skimmed in from behind the ridge at about four feet off the deck. Me, I was terrible, but it was still a trip. Someone (I won't say who) flew the Sheetrock into Chris's antenna pole. It made for an excitingly abrupt video replay, though. Great tape.

Well, mountain sloping isn't all rocks. Last summer we bounced twenty miles north from Kittitas, up to Naneum Ridge, five miles of grass slopes, just south of Mission Ridge Ski Area, 6000'.

The wind was pretty good so I was practicing bringing my carbon winged Fun One up the slope to kill speed, and then reversing to almost land, all in big circles, till I swatted a fly and broke the fuselage off. Phil Pearson joined us, and flew formation with Chris's Sheetrock for a while.

The wind dropped off. We watched Phil skim the top of the trees with his Encore discus launch glider, five hundred feet below, searching for lift. I was running down the slope, in hopes of spotting where it might go down. It drifted well off to the right before he found a thermal.

And then there's Rampart Ridge, just east of Snoqualmie Pass. The road up is so precipitous that a female friend who accompanied me there got out and walked.

But westerly winds spilling through the pass bang squarely into Rampart, which sticks out toward the South. So... Great lift. The EPP-only LZ is the gravel road. Scarily steep recovery zones.

One rainy day there, I went sixty feet up a fir with spikes to get a Highlander back that I happily would have sold for almost nothing. Adam Weston's JW and Chris's first big delta with video gear are somewhere in the forest, fourteen hundred feet below.

The hang glider guys show up about five on summer afternoons, late enough so they can land on the lakebed of Keechelus without worrying about thermal turbulence. They often look down on us from a thousand feet above the general ridge level. I watched one do loops, tip rolls, and low passes from behind the ridge, showing off for his little girl.

East end of Divide Ridge, with Goat Rocks in the background. Photo by Philip Randolph

Oh, yeah, a while ago, Bill Kuhlman asked if I'd write a bit about Northwest slope sites. (Well, yes, it is about time I let readers know what this article is supposedly sort of about.)

I told Bill, "I couldn't possibly write anything as complete or as helpful as just going to slopeflyer.com." There, the bulk of the Washington and Oregon slope site reviews are by intrepid slope explorer... yep, CE.

Still, there is room for this loose (not exaggeration) note on a few.

Yet the above descriptions are basically irrelevant. Well, at least until mid-summer. The high slope sites (4500'-6800') usually don't lose their snow till sometime in July, so this time of year (spring, as I scribble) we start out at Saddle Mountain (See the May *RCSD* article).

At the end of April, a bunch of the guys went back to Saddle Mountain, in central Washington. I wasn't there, but the guys explained that the winds picked up till Sheetrock snapped in two. Damian's heavy homebuilt "Great Jones" got blown way back. Now, I've seen these guys playing poker *in the rain* into the AM, so I knew the weather was serious when they told me the grit was blowing so hard at midnight they couldn't get out of their trucks.

There are a few lower sites in the Kittitas valley, roughly between Cle Elum and Ellensburg: Horse Canyon, Lower Table Mountain, and a nice little crunchy friendly bump just before the game fence at Joe Watt Canyon.

One April I hiked up the west side of the Yakima River canyon, South of Ellensburg, up to Umtanum Ridge. The wind was over my right shoulder, so I flew my Boomerang, ahead and above me, on the right side of a spur ridge, while I hiked, up. Great wildflowers. One horny toad.

And Chris now gets us south to fly in or near the Washington/Oregon Gorge. Memorial Day weekend he's got us headed down to Greyback or Bald mountains, or Hood River Ridge, called "Lumber Ridge" by the locals, or some of the many other ridges in that slope paradise, some of which have landing zones.

But that will, probably, be another story.

- You'll find more complete information about the above sites, and more, by state, at <slopeflyer.com>.

- Insitu (UAVs — ScanEagle, GeoRanger, SeaScan, and Aerosonde) <www.insitugroup.com>

- 60" EPP Javelin (gets the most air time on most of our slope trips) <bowmanshobbies.com >

- 34" EPP Red Herring (zippy delta, a blast to fly, many guys' favorite) <liftworx.com >

Philip, flying an Ionosphere in tight circles over a ridge tip SW of Mt. Rainier. Photo by Erik Utter

On the 'Wing...

Bill & Bunny Kuhlman, <bsquared@themacisp.net>

Redwing, Part 4

This installment covers the finishing and test flying of the two meter version of the Redwing planform. We've already started building the XC version, and so will also give readers a progress report on the construction of that aircraft.

The control surfaces on the Redwing 2M are fairly large. The elevator halves are about 60 square inches each, and each aileron is 70 square inches. We searched for servos with a bit more torque than a standard servo, which puts out around 40 inch-ounces. We chose the Hitec HS 425 BB (46 in-oz) for each elevator half, and the Hitec HS 225 MG (54 in-oz) for each aileron. The rudder servo is a JR NES 341 (32 in-oz).

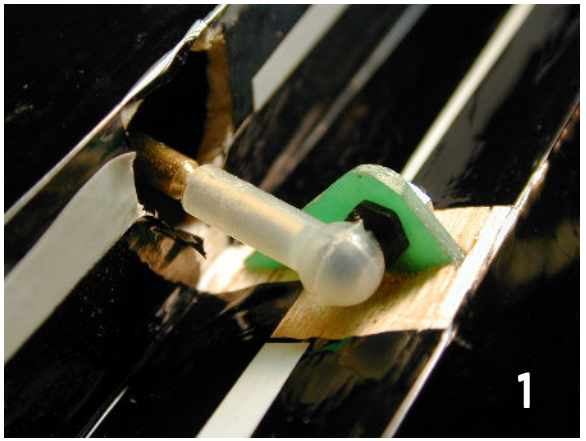
Because of the angled hinge line, we incorporated ball links at the aileron and elevator control surfaces. (Photo 1) The control horns are internal, and we fabricated these from glass fiber printed circuit board. These horns are incredibly strong. The surfaces were sanded until the underlying fiber was exposed, and hard balsa triangle stock supports were glued to to both sides before installation in the control surface.

At the wing servos, standard metal clevises were used to connect the pushrods to the servo arms. (Photo 2)

The rudder is actuated through a simple pull-pull cable system. (Photo 3)

Our intention when covering a sailplane is to make the bottom some dark color so the outline is silhouetted against the sky as it flies overhead, yet reflect the heat of the sun while it's on the ground. Red and black are therefore good colors for the bottom, and white for the top. In keeping with the name Redwing, we decided to place a broad red band (MonoKote metallic wine) around the right wing, so black became the bottom color.

We used MonoKote for all of the wing covering. The wing control surfaces — the two ailerons and the elevator halves — are all top hinged, and we used MonoKote as the hinge material for them. The fin and rudder are covered with white MonoKote, and the rudder is hinged with three small CG pinned hinges.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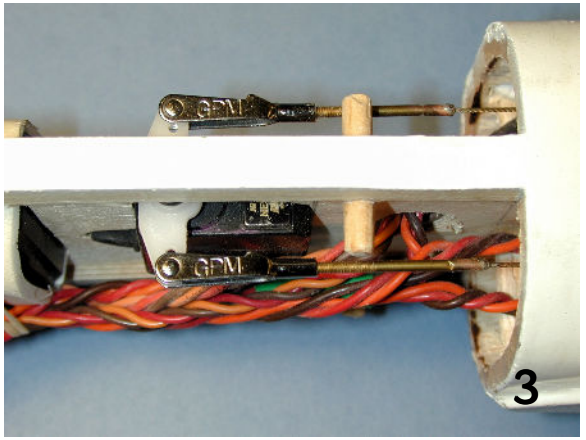

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As is our usual practice, we covered the fuselage with fiberglass cloth and polyester resin. We used three ounce cloth on the front and along the bottom of the sub fin to withstand the abrasion which takes place during landing. Three quarter ounce cloth was used over the rear of the fuselage to act as a base for the paint finish.

A coarse grit PermaGrit sanding bar was used to eliminate rough areas of overlapping fiberglass. A fine grit PermaGrit bar and a rubber backed sanding pad were then used to even the entire fuselage surface prior to painting.

After masking off the fin, painting began with several coats of gray primer over the fiberglass and resin. Visible high spots were sanded off and more primer applied. Once satisfied with the surface finish, several coats of black were applied to the bottom and several coats of white were applied to the top.

It became obvious during the design process that the neutral point, and hence the CG, was going to be very close to the leading edge at the wing root. We therefore lengthened the nose a moderate amount in an effort to reduce the necessary ballast. While this increased inertia in pitch, flight characteristics do not seem to have been adversely affected.

We determined the mean aerodynamic chord and neutral point through simple geometric means. The established neutral point was marked on the bottom of the fuselage, along with the locations of the 0.025 and 0.05 static margin points. On the balance stand, we taped lead to the forward portion of the nose until the CG was properly located with a static margin of 0.025.

The front fuselage sides are actually carved blocks of balsa, hollowed out to a thickness of 1/8th inch. Thin aluminum sheet was cut to the nose contour and taped in place. The nose portion was then placed in a large coffee can, completely surrounded by wet cotton cloth. The lead was divided in half, melted, and a portion (around 8 ounces) was poured into each side. (Photo 4)

The plywood keel holds the radio gear in cut-out compartments — battery pack up front, receiver behind, rudder servo near the wing leading edge. (Photos 5 and 6)

Ready for flight, the Redwing 2M weighs 60 ounces, just four ounces more than Blackbird #7. Considering the massive amount of lead in the Redwing nose and the beefed up spar system which is incorporated, this was a pleasant surprise. With 1256 square inches of area, the wing loading turns out to be under seven ounces per square foot.

Our JR PCM 10 has several programming functions which are put to use when setting up and flying the Redwing 2M.

• Aileron, elevator and rudder functions have three-position switches for variable rates.


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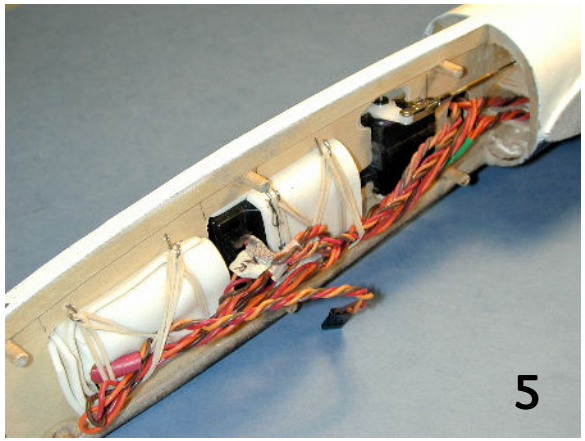
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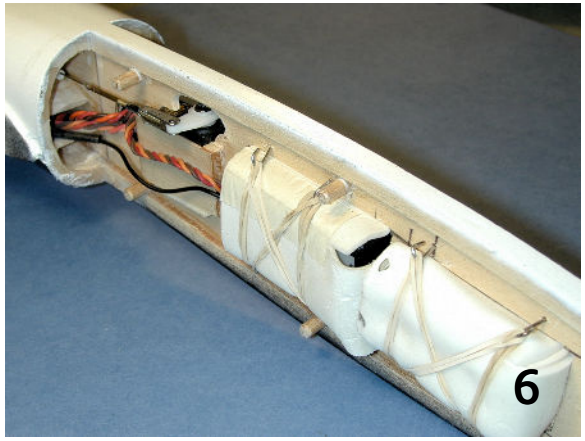
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• Aileron, elevator and rudder functions have variable exponential capability.

• A three-position Landing switch can be configured to set elevator and "flap" neutrals for individual flight modes, such as launch, cruise, and landing.

We initially set up aileron and elevator rates for 75%, 50%, and 30%, with no exponential; rudder was set up for 100%, 75%, 50%. Additionally, the Landing switch settings were configured to raise the ailerons and depress the elevator in a proportion we felt would be acceptable as a starting point.

At the SASS field, Dave Jensen was talked into handling the transmitter for a hand launch with all settings at the middle rate. After a successful hop, some adjustments were made to the elevator rates. These were reset to 60% with 30% exponential, 50% with 25% exponential, and 40% with 20% exponential.

A second hand launch with ailerons at middle rate and elevator at lowest rate. Dave was pleased with the resulting changes to the flying characteristics, so it was off to the winch.

With the initial tow hook location at the 0.05 static margin mark, about 3/8" in front of the CG, the Redwing went up the line with just a small rudder correction. Off the winch, the Redwing went straight out. Although it was fairly breezy, good upwind progress was made. Left and right turns seemed to be well coordinated with the preset aileron-rudder mix. Dave put in two clicks of down trim, but mentioned this may have been necessary due to wind conditions. Landing was uneventful, but the "crow" capability was not explored.

Winch launching the Redwing 2M. Bill launching, Brendon Beardsley at the transmitter.
Photo by Dave Beardsley, composite by Bill Kuhlman.

Sherman Knight took over the transmitter and experimented with S-turns and tight circling turns, and tried out the crow switch. He was thrilled with the turning ability, but the crow settings put the Redwing into a dive.

The Redwing 2M coming in for a landing. At this point we were still working on eliminating any pitch change when "crow" was activated. Photo by Dave Beardsley.

After adjusting the crow settings on the ground, Sherman took the Redwing up again. The crow settings now resulted in a less severe dive, indicating more adjustment was necessary, but Sherman couldn't hold back on his exuberance about it's turning abilities.

The big test for the Redwing 2M, however, came a week later at the hands of Brendon Beardsley. Brendon is an excellent pilot, has flown all of our tailless models at one time or another, and was very excited to fly this one.

A conservative launch got the Redwing into the air. After getting off the line, Brendon headed right, then went left in a long straight line of nearly 1,000 feet. The drop in altitude was barely perceptible. A few turns and the flight ended with another uneventful landing.

Brendon thought the tow hook could be moved back some for a better climb, and over the next few flights it worked its way back to a point nearly on the CG. This resulted in greater height off the launch, and no tracking problems.

We also got the crow settings configured so there was no pitch change when the Landing mode was activated, settling at 62% up flap and 107% down elevator. (Full elevator travel is 125%, so there's 18% down travel left.)

During landing, Brendon likes to raise the nose to slow the aircraft. With crow activated and a small amount of back stick, the Redwing lands beautifully. Brendon was able to hit 97 points on the landing tape twice in a row, then landed a 98 on the next flight!

The only potential problem to show up appeared during high speed flight. There is some control surface blow-down that is not handled well by the servos. The radio system is currently running off a four cell NiCd pack. We're hoping a five cell battery pack will improve things in this area.

Despite wind and turbulence, Michael Knight was able to take advantage of thermal lift on two flights. Since the Redwing is based on Michael Richter's Alula planform <http://www.dream-flight.com>, it was not surprising to hear Michael say the Redwing thermals in similar fashion.

Overall impressions...

• Everyone loves the way it turns. Like a car with front-wheel drive, where you can do some steering with the throttle, you can set the bank angle and control the circling with elevator alone. Since aileron and elevator are pretty much kept in neutral while circling, you can set elevator trim at the transmitter and it will circle hands off for extended periods.

• Straight and level flight, as when cruising between thermals, is faster than expected, but results in less height loss than

Left: Michael Knight at the controls as Bill launches the Redwing 2M. Right: It just takes small amounts of elevator input to maintain a turn through several rotations. Note the lack of aileron deflection and small amount of up elevator in this photo. Photos by Dave Beardsley

anticipated. This indicates it will do well in windy weather, where it's an advantage to be able to go further upwind in search of thermals and return from far downwind for landing.

• Crow can be used effectively when landing. Activating crow slows the aircraft and increases the sink rate. When crow is deactivated, the nose drops and the aircraft speeds up. Brendon quickly learned to activate crow and keep the nose up until close to the ground. Once crow is deactivated, the nose drops and the aircraft is on the ground with little sliding.

• Although conditions were such that lift was light, intermittent, and most likely caused by wave action and not thermal activity, Michael Knight had the Redwing climbing in relatively flat circles on two separate flights.

———

With several successful flights on the two meter Redwing, our desire to complete the XC version has increased dramatically, and we already have the two wing halves well on the way to completion. The lower sheeting and cap strips are glued to the ribs and the spar system is complete. We have yet to install the servos, cut out and complete the control surfaces, and apply the top sheeting and leading edge. It's off to build a fuselage once those procedures are complete.

This XC version is a huge airplane — 2300 square inches of wing area and a projected flying weight of about nine pounds. Our building table is six feet long and three feet wide, but getting the wing rod receptacles properly aligned was a real challenge. It took some ingenuity to have the two halves temporary joined at the root while the spar webbing and brass tubing were held in alignment and the epoxy cured.

Brendon Beardsley brings in the Redwing with "crow" activated. Because activating crow has no affect on pitch trim, Brendon has applied some back stick to the elevator to bring the nose up and slow for landing. Photo by Dave Beardsley

We've also found that because of the forward sweep, the wing panels will not nest with the Blackbird wing panels, so we're also looking for more storage room.

A few Redwing XC construction photos will appear in the next installment, along with descriptions of its unique structural aspects.

Peter Wick on Planks

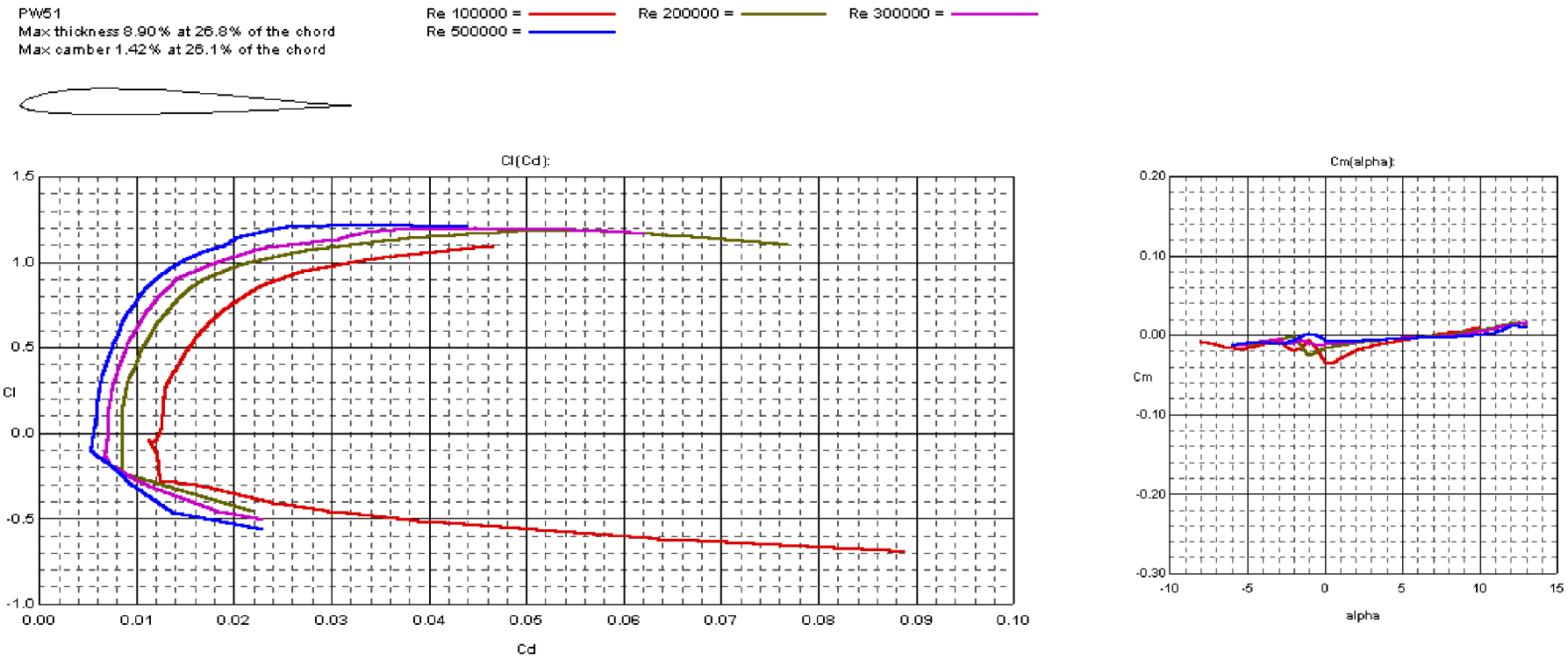
by Peter Wick, <and-wi-pep@parknet.dk>

Airfoil design

When I started to design the PW51 plank airfoil, I made a kind of list to keep my "learning" in mind. It looks like this:

Airfoil characteristics	Why?	Solutions / Ideas
Moment curve at higher Reynolds-numbers almost constant	No "rodeo-ride" at high speeds, low static margin possible	Pronounced flow acceleration on both sides, which allows the flow to change from laminar to turbulent with only a small bubble. On the other hand, this means that it will be not possible to make use of extremely extended laminar flow. But the question is also, can you in reality build so accurate that you get 100% laminar flow on the underside of the airfoil. I mean, 100% laminar flow looks really good on the computer, but can you actually build a pivot point where the flow stays attached while passing this point? Maybe a solution with 80% laminar flow on the underside at low angles of attack, combined with some longer laminar flow on the upper side might be better; especially when you have the moment coefficient curve in mind.

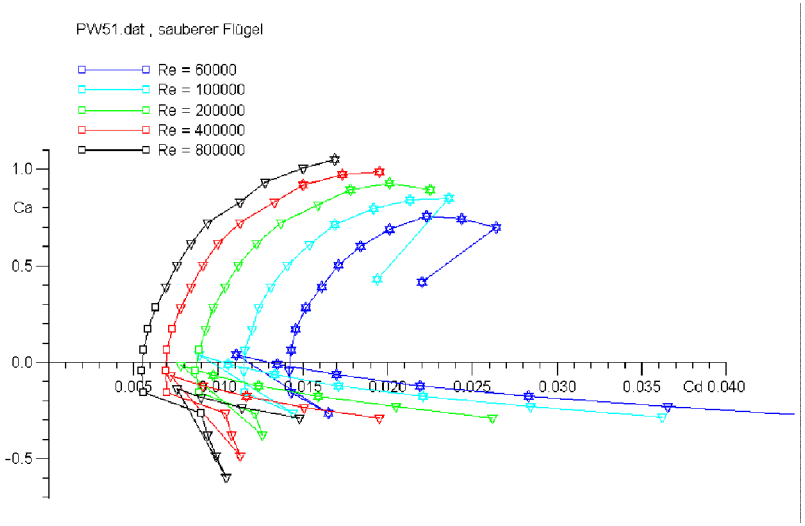
Airfoil characteristics	Why?	Solutions / Ideas
Minimum drag at cl = 0.0	Speed without any flap deflection	Not too much camber, so that the lowest drag at high Re-numbers occurs at cl = 0.0. A solution may be to reduce the amount of concave shape on the upperside and use a very harmonic distribution of concave shape on the underside. This means no pronounced S-shape.
High maximum lift at high Re-numbers	The F3F / Dynamic soaring	Thickness should not be too low, as this will have some negative consequences for the reaction of the airfoil to flap deflection and the maximum lift obtainable at higher Re-numbers. The first part of the upperside of the airfoil should be designed for high angels of attack, which means that the point of max thickness moves forward, which helps to keep the moment coefficient low.
Low drag over the entire cl range	The reason is the acceleration of the airplane. To look at minimum drag at high Re-numbers and low cl's is in my opinion not optimal, because the higher Re-numbers do not occur instantly — the wing will, during acceleration, fly at low cl's and low Re-numbers.	See above.
Design for a specific flap chord	As a plank always flies with flap deflection, the airfoil should show a behavior that features minimal loss of lift with negative flap deflection, and a more or less parallel shift of the moment coefficient curve.	Shift from laminar to turbulent flow on the underside in front of the flap pivot point.



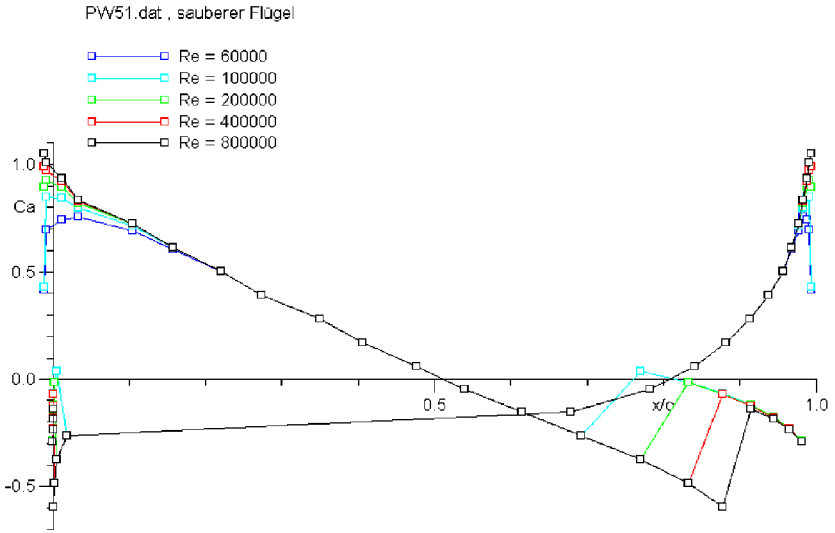
Xfoil polars for the PW51 at Re-numbers 100k / 200k / 300k and 500k. The polars show quite good the intended purpose of the airfoil. The possible negative cl`s make inverted flight an ease. There is also very low drag at low cl's at all Reynolds-numbers. Moment characteristics of the PW51 airfoil calculated with Xfoil. Compared to other airfoils for the same purpose they are rather constant. But it could be better at a Re-number of 100k.

Some practical experiences with the PW51:

- The moment coefficient seems to be slightly positive, but minor changes at the rear of the airfoil can change that.
- Flap chord was initially set to 20%, but experiences in practise showed no disadvantages with deeper chords.
- Planks with the PW51 airfoils are very stable at all weather conditions and flying speeds.
- The airfoil "loves" ballast, which means the higher the Re-numbers are, the more lift you can get out of the airfoil.
- The PW51 is not very well suited to flying very slow with a very low wing loading. At these rather low Re-numbers



Eppler polars of the PW51, from the Ranis program



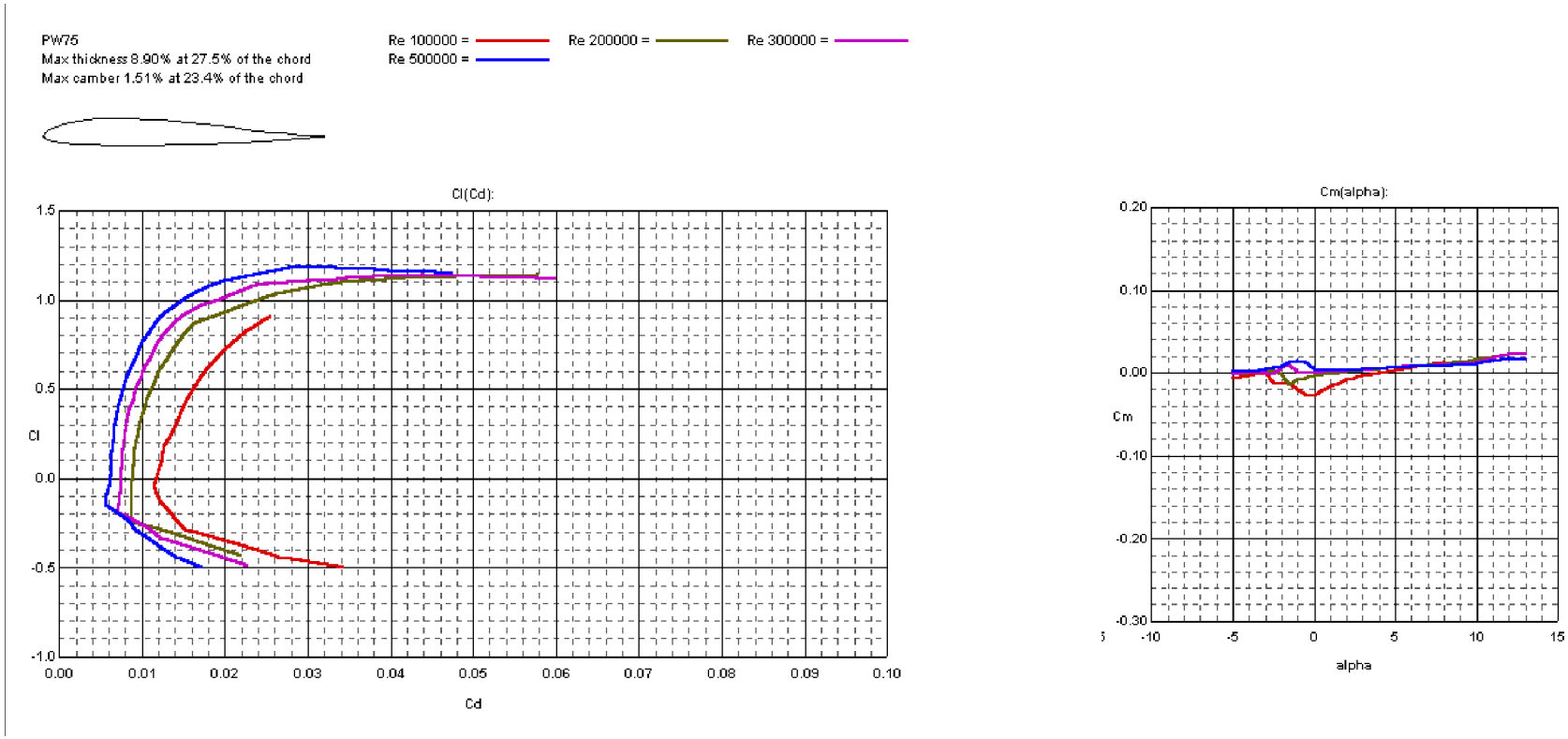
Position of the transition point from laminar flow to turbulent flow on the upper- and underside of the airfoil PW51. You can see the relatively cautious design.

the maximum obtainable lift decreases a lot. The airfoil is too thick and has not enough camber for this purpose.

• The airfoil has shown some "measured" successes:

- DS at speeds of 110 miles per hour. EPP built and too weak carbon rods. (Look at the video on www.EPP-Fun.de)

- I was able to win the Danish pylon racing contest in 2004 with the same model. I finished it the day before.

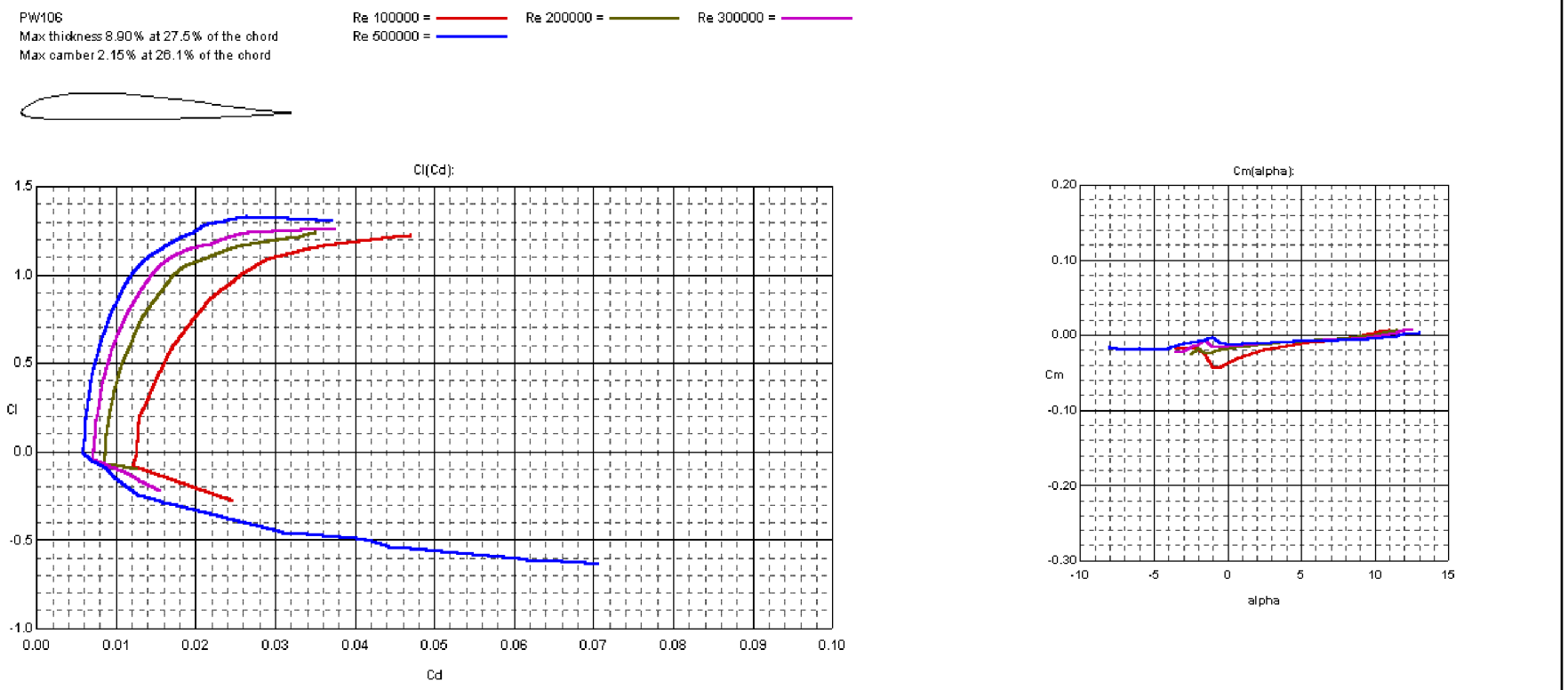


Xfoil polars of the airfoil PW75. There is some lower maximum lift, but remember the moment coefficient of the PW75 is higher compared to the PW51, so in practice you will not need as much negative flap deflection to reach maximum lift, so maybe the PW75 has a higher lift coefficient than the PW51. Moment characteristics for the airfoil PW75 are on the right.

This section was designed for slope flying and aerobatics and is based on the PW51. The PW75 has more reflex and therefore has a more positive pitching moment than the PW51.

With no flap deflection, the coefficient of lift should be around 0.4, so it should do well in light lift conditions.

Despite the fact that this airfoil was designed for slope flying, it also does well in flat field thermal conditions.



Xfoil Polars for the airfoil PW106, which reaches the highest cl max of the three airfoils, but will not fly very well inverted.

The PW106 section is based on the PW51 as well. With more camber, it has a significantly higher maximum lift coefficient than the PW51.

Because this section can produce little lift when inverted, it is not well suited to aerobatics.

It is, however, a good choice for a plank designed for thermal conditions.

The Gnome

Revisited, Repaired, Revamped and REAL Fun!

By David Stark, <partygarage@yahoo.com>

How many of you have an old, built-up, two-channel polyhedral trainer/floater/beater sailplane in your fleet? It's probably damaged from use, abuse or hangar rash just enough that you keep putting off repairing it, but not so much that you're willing to toss it.

I have, or should I say, HAD one of those. But in my case, I actually completed the repairs, made some improvements and ended up with a fun little ship and learned a lot in the rebuild process, too. Here is the tale of a rebuilt and revamped sailplane that may just inspire you to revisit some of those oldies-but-goodies in your workshop.

The story of my "Lazarus" project began more than 20 years ago. In the mid-80s I was a teenaged RC pilot. I flew slope, thermal and "slimers" with my Dad. After graduating from the obligatory (and ubiquitous) Carl Goldberg Gentle Lady, I built a Midway Models Gnome. My Gnome was the 60" hand-launched version complete with a cutting edge Eppler 205 airfoil and a finger-hole in the bottom of the fuselage for maximum javelin-launch performance.

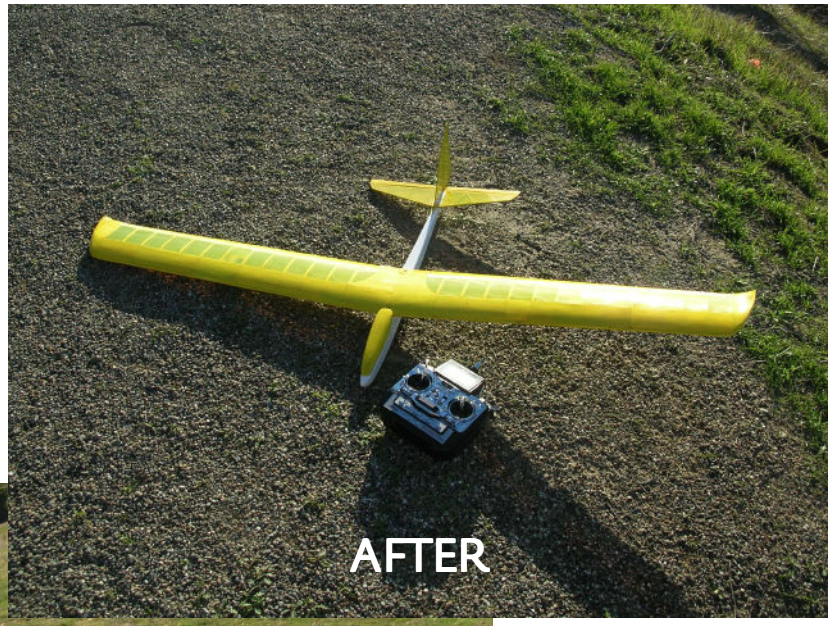
I flew the snot out of the Gnome. High-start launches at the local junior high school, slope flying in Southern California foothills and general two-channel buffoonery and fun.

Eventually, girls, guitars and motorcycles (not to mention college, grad school and the ensuing career) brought an end to my RC activities. The old metal-cased Kraft and Futaba transmitters were packed away along with the remnants of my RC fleet. The Gnome, still in one piece, was relegated to various attics, closets, a move to Arizona, then back to California and, finally, to the rafters of my garage.

When I decided to re-enter RC last year my first thought was to get into electrics. However, the cost and complexity were too much for my limited RC budget. Still wanting to "tickle the sticks" again I turned to the Gnome. With the exception of a missing canopy and minor damage to the empennage, the airframe was complete. Of course, the old Futaba flight gear would have to go – the victim of "narrow-banding" and dead (and expensive to replace) ni-cads.

Bringing the Gnome back to life was pretty simple. I repaired the tail and replaced the RC gear with HiTec bits. The HS-81 servos dropped right into the rails that previously held the old Futaba FP-S20s. A dual-conversion, eight channel HiTec receiver replaced the AM, four channel Futaba RX – and was smaller and lighter, too! I carved and covered a new balsa canopy, charged the new batteries, programmed my new HiTec Eclipse 7 transmitter and headed off to Fairmont Ridge in Castro Valley to "re-maiden" the Gnome. After 20 years the laws of physics hadn't changed and the Gnome was slopin' like a champ.


BEFORE


AFTER

The next few months reminded me why the Gnome was so fun "back in the day." I proceeded to fly the snot out of it – again! However, I longed for more excitement, more control... dang it, I wanted a full-house ship.

A botched landing at Del Valle Regional Park, a popular slope site outside of Livermore, was the inspiration I needed. Said landing damaged the horizontal stabilizer - requiring both balsa and covering repair work. As I prepared to make the fixes I started noticing other issues. Specifically, 20 years worth of hangar rash in addition to the damage and hasty repairs completed at the hands of an adolescent pilot/technician. While the Gnome had been airworthy enough for me to get back into RC – it was also a mess! However, rather than just toss it and start over with a new, possibly composite, (definitely expensive) sailplane, I decided to give the Gnome a THIRD chance, repair the damage from all the years and give it a fresh, full-house makeover.

The following is an illustrated guide to how I converted an 80s-era, built-up, 60" polyhedral, rudder/elevator, hand-launched glider into a full-house fun machine. I'll concentrate primarily on the wing rebuilding and modifications since that work was at the heart of the conversion project.

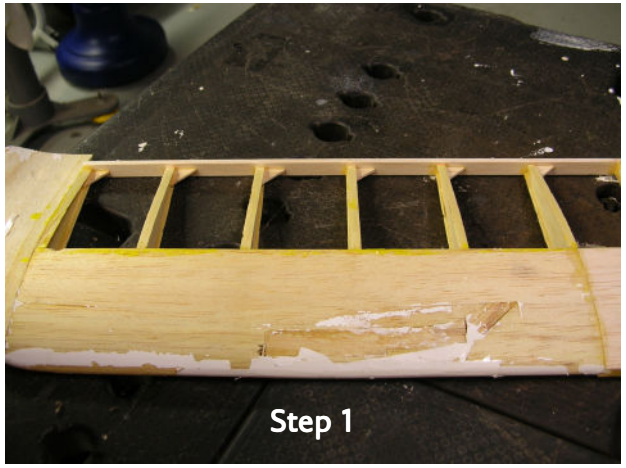
Step One: Remove all the covering. Sounds simple, right? This was probably the most tedious step. However, it needed to be done. As the old MonoKote came off, I discovered more and more repairs I had done during the first incarnation of the Gnome. Once all the covering was removed, I determined that large sections of the "D Box" sheeting would need to be replaced.

Step Two: Remove the polyhedral breaks. A razor saw made quick work of the LE, TE and, finally, the top and bottom spars.

Step Three: Prep the wing for reassembly. I prepped the LE, TE and spars for "scarfed-in" splices. In the spirit of redundancy, I also made up some carbon fiber joiner blades using some sample scraps I scored from Aerospace Composites Products. (It's nice having a hobbyist-friendly composites shop less than 10 minutes away!)

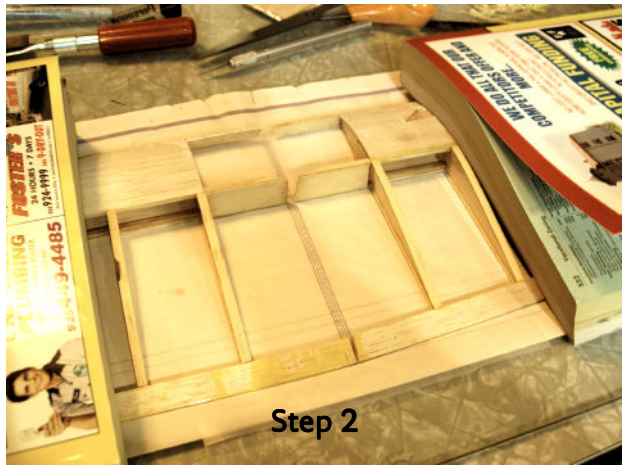
Step Four: Join the outer panels to the inner panel. I joined the outer panels to the center panel with the carbon blades just to tie everything together then added the scarfed spar and leading edge splices.

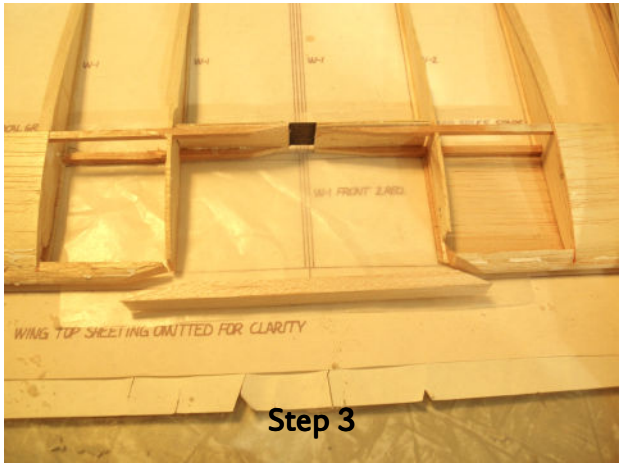
Step Five: Repair and/or fabricate ribs. Luckily, all the ribs I needed to replace were in the constant-chord section of the wing. I had saved the original plans which featured a rib profile.


Step 1

Step One – Photo 1. Removing the 20 year old MonoKote revealed a horror show of embarrassing repairs. Hopefully, my workmanship has improved since my teenage years.

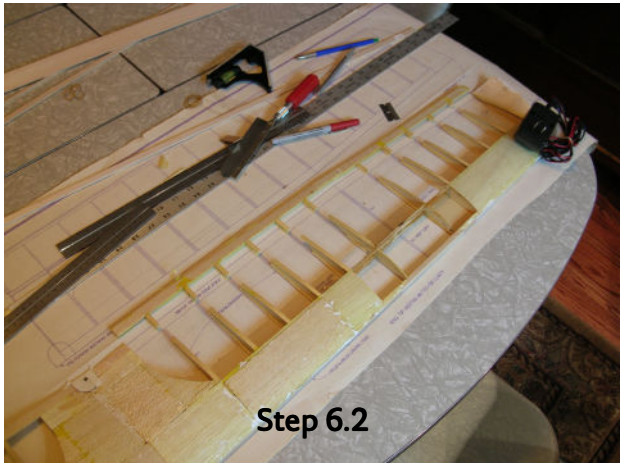
Step Two – Photo 1: The wing was cut apart at the outer polyhedral brake and positioned over the original plan to make some preliminary alignment checks. Note the upper spar is shorter to allow for the poly "bend." That gap will need to be filled!


Step 2



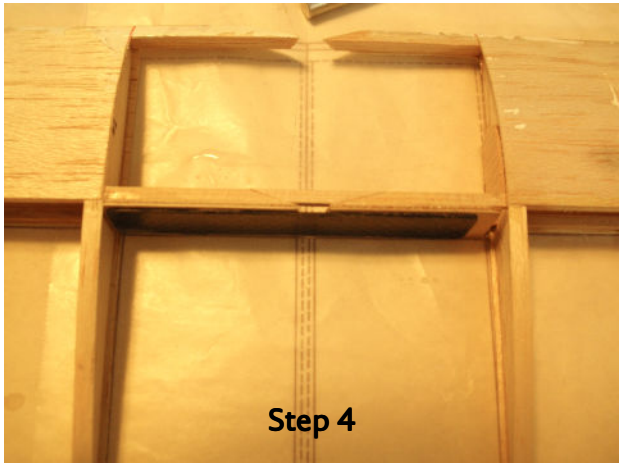
Step 3


Step 6.1


Step 6.2

Step Three – Photo 1: Both spars and the leading edge have been prepped for the "scarfed-in" splices and the outer panel joined to the center section with a carbon fiber plate. Note the missing chunk from the rib on the right.

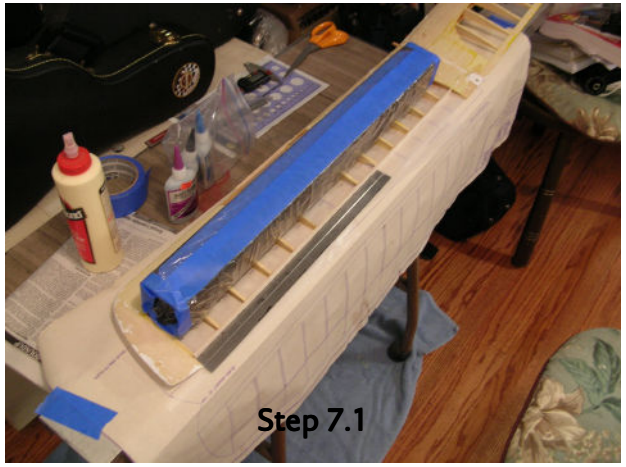
Step Four – Photo 1: Spar splices are installed. Note over-engineered carbon fiber joiner plate. Sometimes, having scraps of high-tech materials laying around the shop can be dangerous!

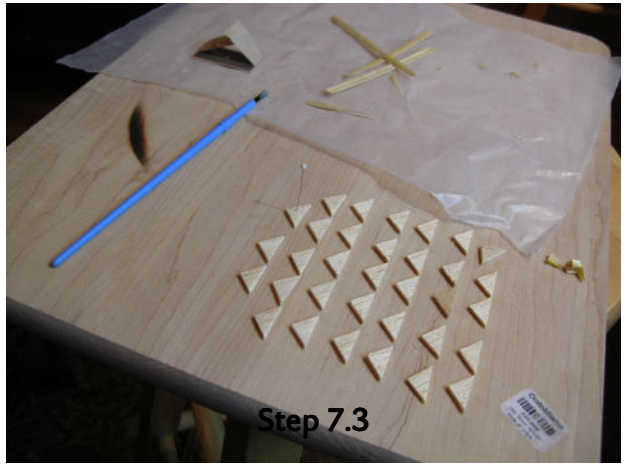

Step 4

Step Six – Photo 1: No turning back now. Full-house, here we come! Note cutting board to protect vintage 1950's kitchen table.
Step Six – Photo 2: The deed is done. Note clever use of "wall-wart" charger / wing modification weight. The old trailing edge and chunks of ribs will be replaced with a new sub-TE and full-span ailerons.

Step Six: Prep wing for new sub-trailing edge. At this point I had to make a decision about the plan form. The original Gnome has a constant-chord center section and outer panels with a tapered trailing edge. I decided to give the new trailing edge a constant taper from the root to the tip. I used 5/16" x 1 1/4" aileron stock as a guide to determine where to locate the new sub-TE. By making the TE a constant taper I would also have to make the aileron taper, too – both in width and thickness - more about this later. After deciding on the plan form, I marked and cut each rib. I tried to make each cut as perpendicular as possible. While the wing was pretty stable since it was tied together by the LE and spar, I still needed to handle it with care – it would have been pretty easy to snap off the exposed ribs.

Step Seven: Install new sub-trailing edge. For this phase of the project I did all the work on a large section of aluminum extrusion that just happened





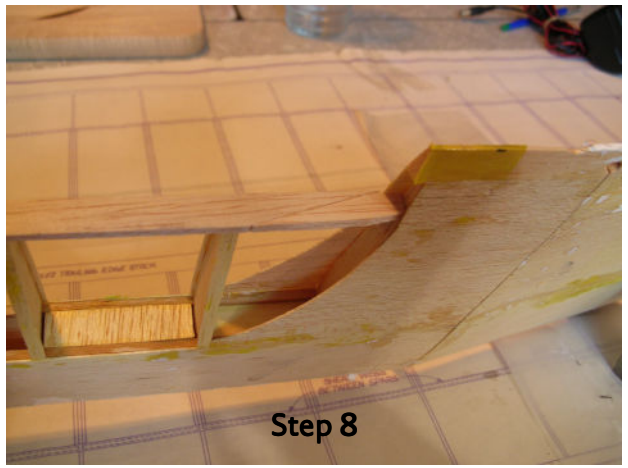
Step Seven – Photo 1: With the wing securely weighted down on a large aluminum extrusion with a chunk of square steel tubing (wrapped in plastic wrap), the new sub-trailing edge is installed. Straight edge keeps everything… straight!
Step Seven – Photo 2: Shade-tree engineering in action. Triangular gussets reinforce the rib/sub-trailing edge joint. Redundant? Probably. Pseudo "trick"? Maybe.
Step Seven – Photo 3: Gusset fever! Each gusset was hand-crafted (from 1/16" scrap balsa sheet), "painted" on two sides with Titebond then carefully placed against each rib/sub-TE with clever positioning tool – AKA "straight pin."

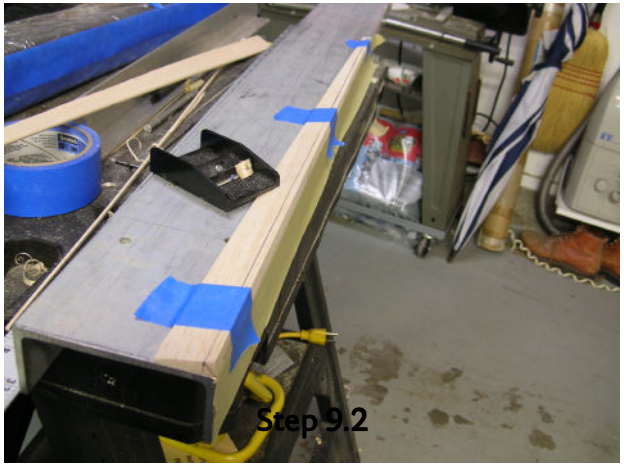
to be laying around my shop. The extrusion was almost perfectly flat and long enough to accommodate each half of the wing. I used 1/8" x 3/8" balsa stock for the sub-TE. This size happened to match the rib height almost exactly – except for the outer panel which taper not only in rib length but in height, too. A few swipes with a bar sander I made out of some "T" shaped aluminum extrusion brought the sub-TE in line with the ribs. I also added small, triangular gussets between each rib and the sub-TE. I'm not sure if this was needed, but it was easy enough to do.

Step Eight: Commit a major engineering error. Butt joints are the worst and should be avoided at all costs. I failed to follow this simple truism when it came to tie the new sub-TE to the ribs at the center section of the wing. I simply butted the sub-TE up against the ribs and added gussets. I should have cut off the entire original TE and carried the new sub-TE full-span. In the epilogue to this article, you'll find out how this error later bit ME in the butt!

Step Nine: Fabricate ailerons. I used 1 1/4" x 5/16" aileron stock. I had to bevel the front to allow for top-hinging. I also cut a taper into each aileron to

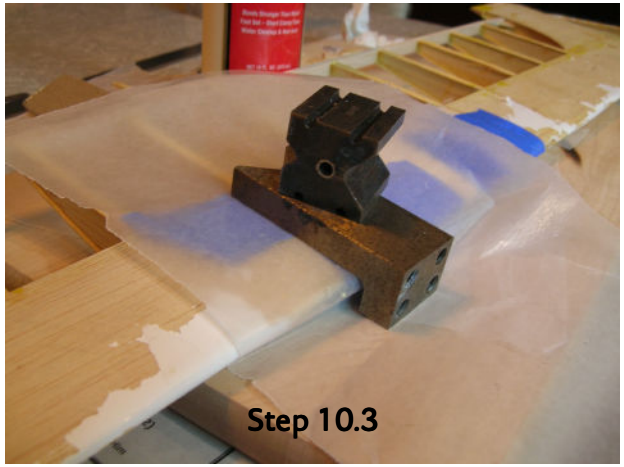
Step Eight – Photo 1: Can you spot the engineering error that would lead to catastrophic failure? The scarf joint looks fine, it's the weak butt joint against the center section rib that would rear its ugly head later.





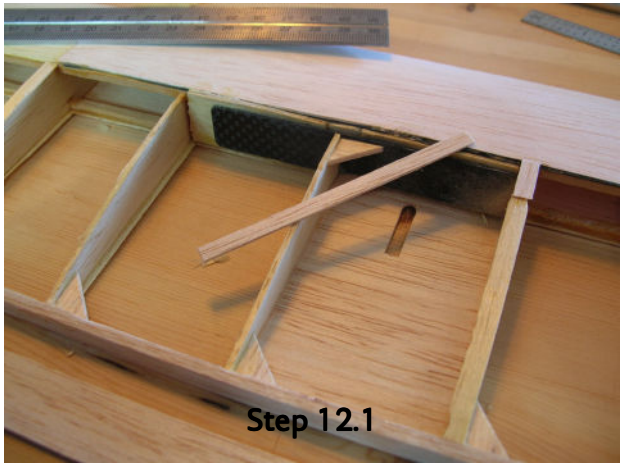
Step Nine: Photo 1: Aileron stock cut to length. I should have left them full-width and made new wing tips. Hindsight...
Step Nine – Photo 2: Aileron stock cut to new plan form and ready to be beveled. Again, that aluminum extrusion comes in handy. Yes, I did razor-plane through the masking tape. The pencil line was a reference to help keep the bevel constant along the entire length of the aileron.

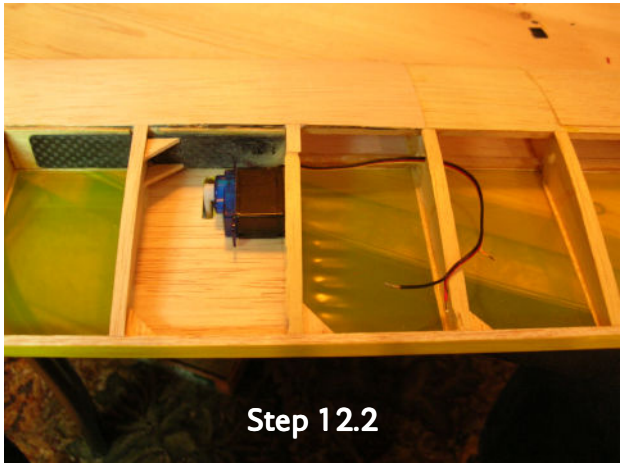
Step Ten – Photo 1: Ready for new sheeting. Carbon tow was sandwiched between the upper and lower spars and the sheeting. Glue is Titebond.
Step Ten – Photo 2: More uses for 2" square steel tubing. This time it's used to clamp down on new sheeting. Note marriage-saving strategy - newspaper protects kitchen table.
Step Ten – Photo 3: For smaller sheeting patches, smaller machinists set-up blocks and low-tack masking tape provide the clamping force.



match my new plan form. Each aileron was 1 1/4" at the root and tapered to 1/2" at the tip. Why so narrow at the point where the aileron has the most authority? I wanted to preserve the original chord length at the tip and make the aileron fit with the original hand-carved tips, too. This was engineering error #2. I should have made the ailerons wider at the tip – for more roll authority – and just made new tips to match. Like I mentioned earlier, I learned a few things during this project!

Step Ten: Repair/replace wing sheeting. I'm not sure if it made any difference, but I also scarfed in the new wing sheeting. Prior to gluing the sheeting down, I also capped the spars, with some carbon tow. Yep, I sure like redundancy! I used some novel clamps





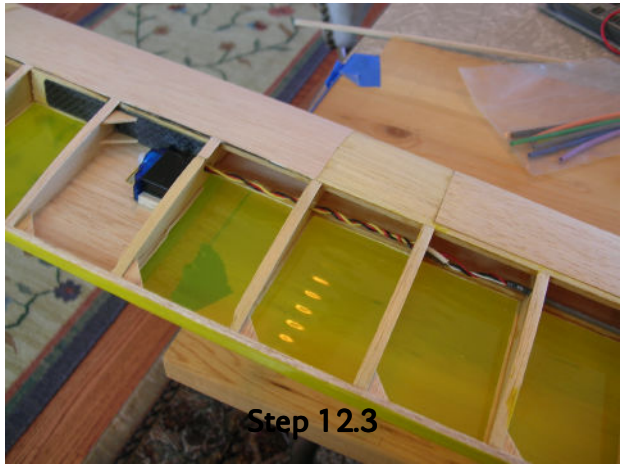
Step Eleven – Photo 1: Home-brew balsa filler. The best mixture was the consistency of runny peanut butter or thick honey.
Step Eleven – Photo 2: Balsa filler in action. It sanded easily without damaging adjacent sheeting.

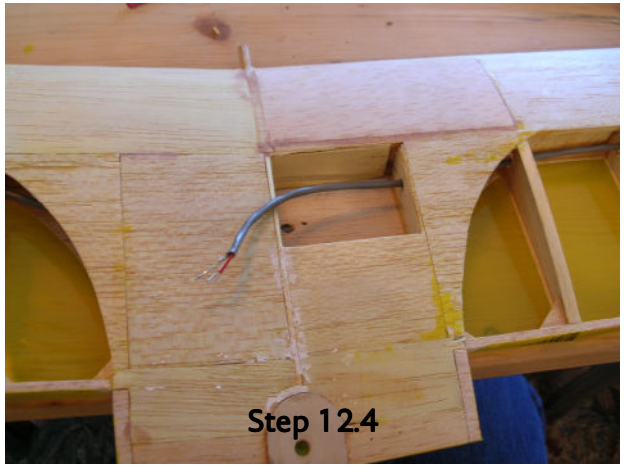
Step Twelve – Photo 1: 1/16" balsa sheet aileron servo "floor" installed and slotted for control arm. New cap strip is next.
Step Twelve – Photo 2: Aileron servo wrapped in electrical tape and CA'ed to floor. Connector has been removed and leads stripped prior to soldering to extension. Note holes in ribs for extension.

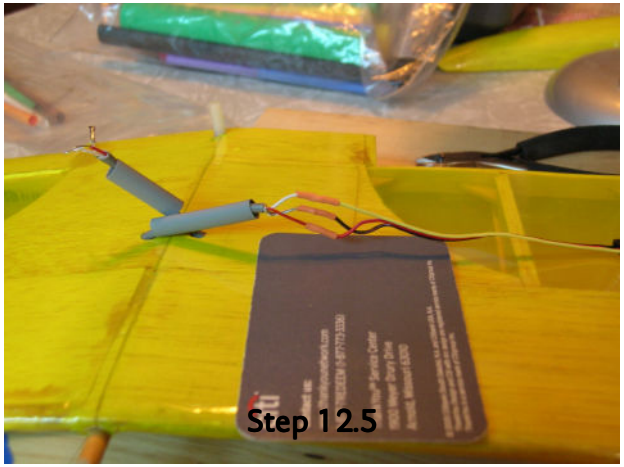
during the re-sheeting work. Specifically, 2" square mild steel tubing and some machinists set-up blocks.

Step Eleven: Fill dings and dents and cover bottom of wing. I made my own balsa filler by mixing some West Systems Low-Density Fairing Filler with Titebond. The resulting paste went on easily and sanded nicely. I also choose a transparent covering so I could show all the areas where the wing had been repaired. An odd thing to brag about – but then again, this is an odd project, to be sure!

Step Twelve: Install aileron servos. Each rib is capped with 3/32" strips. I cut down two of the mid-panel ribs to allow for a 1/16" floor for the aileron servo. Holes were cut in each mid-span rib and in the center section sheeting for the servo extensions. I held off on replacing some of the damaged center section top sheeting until after the servo extensions were installed. One the servos were installed and the extensions "plumbed," I covered the bottom of the wing.







Step Twelve – Photo 3: Extensions completed and "plumbed." Note twisted leads to avoid RF interference.
Step Twelve – Photo 4: Top sheeting was left off until extension was routed through hole in bottom sheeting.
Step Twelve – Photo 5: Connectors soldered to extensions and heat-shrink tubing "shrunk." Grey tubing is more heat-shrink to reinforce splices. Junk mail credit card protects new covering from errant solder blobs.

Step Thirteen: Finish sheeting, filling and sanding and cover top of wing.

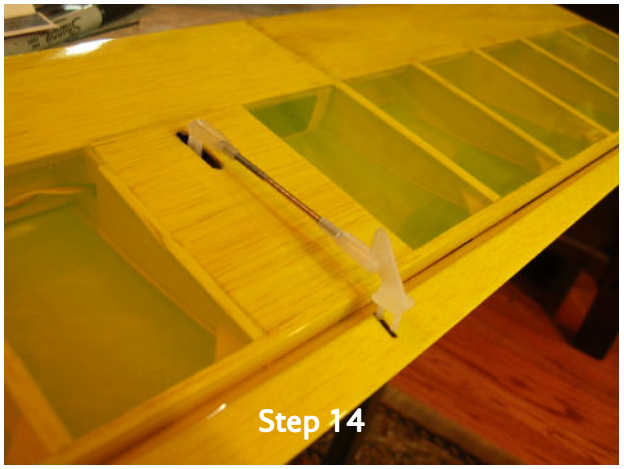
Step Fourteen: Hook up control surfaces. The ailerons were hinged transparent tape. For control actuation I used 1/2A control horns, threaded rod and quick links. Sure, all these bits are pretty "draggy" but they were quick, cheap and easy.

Step Fifteen: Repair the fuselage and empennage. This work was very straightforward. I had to replace all the top sheeting on the fuselage. While I was at it, I stripped the old MonoKote and recovered the fuselage and parts of the tail. I left the cobby fiberglass patch on the vertical stabilizer because I was getting antsy to fly!

Step Sixteen: Hook it all up, program the radio and fly!

I re-re-maidened the – now "full-house" Gnome at the slope site at Del Valle Regional Park. How did it work? Pretty good! The original Gnome turned just fine with rudder and elevator control and I'm not sure if the E205 airfoil was every meant to have ailerons waggling around. The revised Gnome turned OK with aileron-only inputs but really liked to have some rudder, too. This characteristic was just what I wanted/needed – a "full house" transition ship that asks the pilot to use BOTH thumbs for maximum performance. Aerobatic roll response was lacking but the big rudder made quick work of stall turns. Overall, it

Step Fourteen – Photo 1: Aileron control linkage made up of quick links, 2-56 rod threaded at both ends and 1/2A control horns.

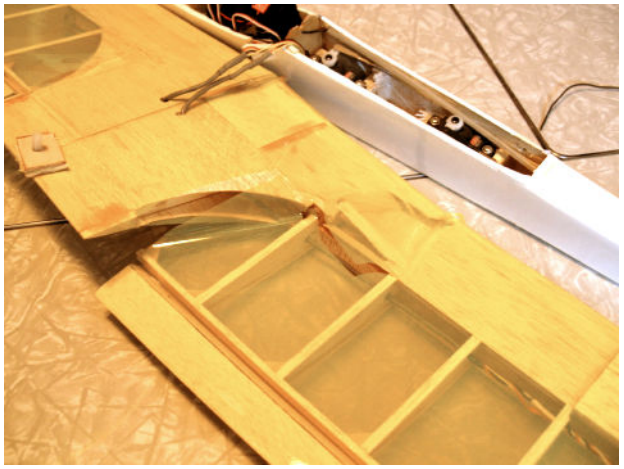


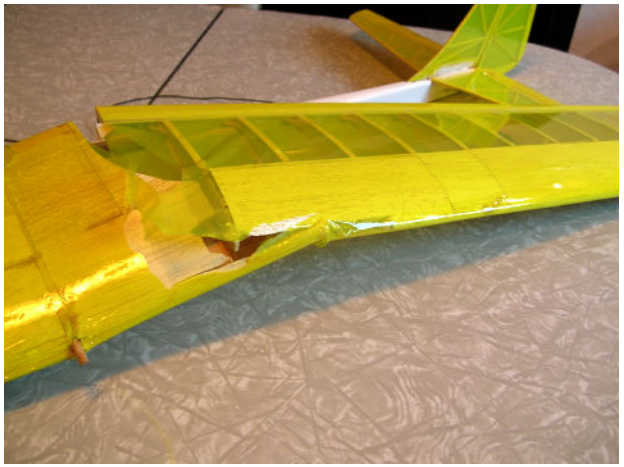
Gnome Post-Mortem – Photo 1: Victim of a low-altitude stall/spin, the broken Gnome.

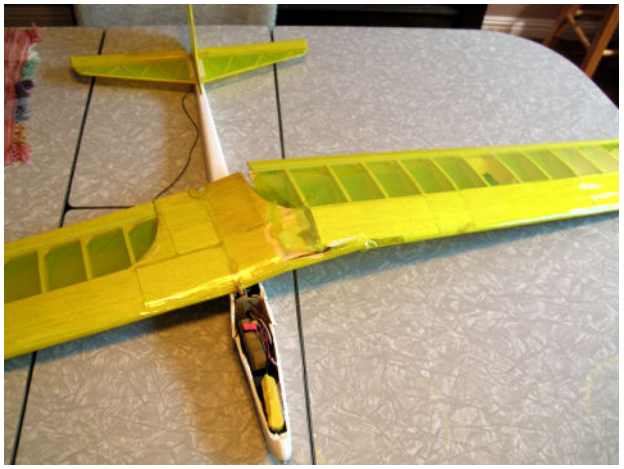
seems like the "flat-wing" Gnome penetrates a bit better and moves out a bit quicker, too.

In conclusion, the Gnome conversion project was a lot of work and also a lot of fun and very educational. The conversion required me to do some reconstruction, new construction, engineering and experimentation with building techniques and materials. I'd never used Titebond AND carbon tow before – and it seemed to work! The new Gnome is cute, sporty and much more entertaining to fly. I attribute this last characteristic to the fact that I gave my left thumb a job. I could have simply rebuilt the Gnome as a conventional polyhedral two-channel floater, but the conversion project really breathed some life and interest into an old glider that could have easily ended up in the trash.

Epilogue: I flew the converted Gnome for a couple of weekends in the light mid-winter lift at Del Valle. On the third, or fourth, outing I launched the Gnome late in the day only to have it balloon up, stall and "auger-in" from about 15 feet.







The resulting damage taught me A LOT about what worked and what didn't work in this conversion project. First, the mid-span joints between the outer and main panels all survived. The scarf-joint spar and LE splices and triple-redundant spar joiners worked great. What didn't work were the butt joints between the sub-TE and the main panel ribs. The weak sub-TE joints both causing the wings to flex forward – crushing sections of the leading edge and "D-Box" sheeting near the center section and damaging several ribs. Additionally, several sections of the "scarfed-in" sheeting also pulled loose at the glue joints. Had I replaced the entire trailing edge, or tied the new sub-TE into the center section more securely, the wing would have fared much better. The fuselage sustained damage with the sides pulling loose from the bulkhead adjacent to the LE and the plate that the wing hold-down bolt threads into breaking free from the fuselage, too.

The damage to the wing looks worse than it is and I can probably complete all the repairs in an evening or two. Again, an hour or two with some fiberglass and epoxy and the Gnome will be ready to go again!

Gnome Post-Mortem – Photo 2: Engineering errors in action. Sub-trailing edge butt joint failed causing extensive leading edge damage.
Gnome Post-Mortem – Photo 3: Leading edge damage. Note failure of top sheeting glue joints.
Gnome Post-Mortem – Photo 4: Wing and fuselage damage. Note mid-span splices and reinforcements all survived. Give it a couple of nights at the work bench and the Gnome will fly again!

NASA

WANTS YOUR INNOVATIVE IDEAS

NASA is seeking proposals for creating and managing innovative activities, events, products, services and other education methods for increasing America's science and technological literacy.

One objective of this request for entrepreneurial offers is to distribute information nationally about the agency's programs and projects. NASA's intent is to enter into partnerships that will result in the establishment of one or more non-reimbursable Space Act Agreements with organizations.

In exchange for a collaborator's investment to creatively distribute NASA information, the agency will consider negotiating brand placement, limited exclusivity and other opportunities as part of a strategic collaboration.

NASA continues to strengthen the nation's education programs and support the country's educators, who inspire, prepare and encourage young minds. The agency plans to establish long-term relationships with stakeholders to increase the nation's science and technology literacy.

For information about the response for entrepreneurial offers, visit:
<http://prod.nais.nasa.gov/cgi-bin/eps/synopsis.cgi?acqid=120084>

For information about NASA's education programs, visit:
<http://education.nasa.gov>

Golden Retriever for sale!

Dick McDonald is selling his Golden Retriever winch system. This set-up was described in detail in the January 2003 issue of *RC Soaring Digest*. (This issue is available within the PDF archives on the *RCSD* web site.)

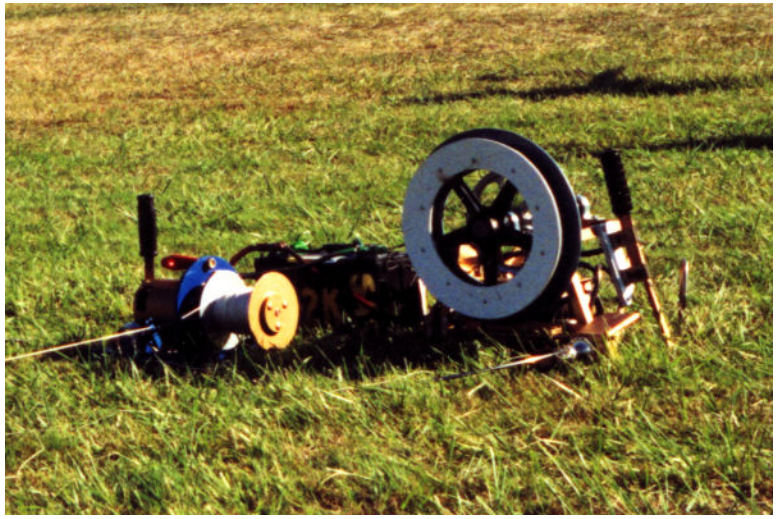
The Golden Retriever system includes both the winch and a completely automatic retriever which allows one person to both launch and retrieve. A single 12 volt battery operates both the winch and the retriever.

Dick says he'd like someone in the Seattle area to purchase his work of art, as they can easily pick it up at his home in Redmond, but he's willing to ship it at cost if the buyer lives a great distance outside of Western Washington.

Price is $350, plus actual shipping costs, if any.

It would be difficult to find a winch alone at this price!

If interested, call Dick at (425) 828-3033.



SLED DRIVER CHRONICLES

Jay Decker, <sleddriver@monkeytumble.com>

After having my free time for the past few months consumed with maintaining access to my local slope, Eagle Butte, this month I'm going to thank the RC slope soaring community and AMA for helping save the Eagle Butte, thank those who save flying sites every year, and take a risk by offering an admonishment regarding "flaming" others on the internet.

It seems that the modeling press primarily covers:

• **Piloting Accomplishments:** Piloting accomplishments tend to make good *stories* and appeal to the fascination with the "Single Combat Warrior" ethos that Tom Wolfe described in his book *The Right Stuff*.

• **New Planes and Equipment:** This is a pursuit of man and machine, so it makes sense that the man be fascinated with the machine and gadgets and gizmos inside of the machine.

• **How To's:** How to's are great; they give us hope of being an ace pilot when Joe Wurts tells us how to perform a particular flight task, and also teach us how to do routine tasks, like installing servos in a fiberglass fuselage. How To's can also fuel the ideas that result in achieving dreamed of objectives, like the elimination of external control linkages with Harley Michaelis's RDS.

Periodically, there is an article that describes an organizations effort to develop a flying site, but I suspect that there are a lot of organizations and individuals who work hard *every year* to maintain flying site access and that we never hear about it... The modeling press does not cover those stories because they are long and complex, and frankly, kind of boring if you are not directly affect. Such has been the case with Eagle Butte for nearly ten years, and that is really what this article is about.

In 1997 the Mid-Columbia Soarers (MCS) and a local hang glider club entered a land use agreement with the property management company that controls the Eagle Butte property. Since then, MCS has provided $4 million dollars of liability insurance to the property management company required under the agreement. While I've only lived in the area a few

years, I've observed the MCS club officers having difficulty with and spending a great deal of time every year obtaining the insurance certificates required under the land use agreement. The insurance required includes supplemental insurance for $1.5 million above the standard $2.5 million provided by the AMA. This past year I took my "turn in the box" to obtain the required insurance, including finding a new policy for $1.5 million of supplemental insurance, since AMA had stopped providing supplemental liability insurance under a new insurance contract in 2005.

To make a longer story shorter, I struck out trying to find affordable supplemental insurance. I turned to slope fliers on the internet for help. Through a grassroots letter/fax/email writing campaign by interested slope fliers, the AMA was persuaded to resume providing supplemental liability insurance for AMA chartered club flying sites. If you are interested in the internet discussions, go to the sailplane slope forum on RCGroups.com and search on for the thread entitled "Say Good-bye to Eagle Butte?" While going to the internet worked great for MCS, you would be advised to carefully consider going to the internet for your specific concern. MCS considered this alternative to be the "nuclear option" that we did not want to take unless forced to – the target and trajectory can not be controlled after the button is pushed...

This page: Richard Dolf flying at Eagle Butte on a beautiful April morning. Photo by Jay Decker

Opposite page: Tom Evans' ASW 24 on approach at Eagle Butte. The winglet tips are Tom's design and construction, and while the winglets might be a little weak on being true to scale, they are very effective. Photo by Jay Decker

Thanks to everyone in the RC soaring community who wrote, faxed, and emailed letters to help save Eagle Butte – your effort saved Eagle Butte. I apologize for not being able to thank everyone individually here. There are simply too many people to thank, which in no way diminishes the contribution of each individual.

Thank you to the AMA for hearing us, for agreeing that a wonderful slope flying site like Eagle Butte should not lost for something that AMA could do something about, for working graciously with us, and delivering on AMA's promise to provide the insurance.

Thanks to all the guys who have done what it took to maintain access to Eagle Butte through the years – there have been many.

And, thank you to all the unsung heroes who have worked and work today to maintain access to flying sites for our pursuit. Over the past year I've learned there are many such heroes.

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I was "flamed" (to send an angry, hostile, or abusive electronic message to or about) on the internet for the first time recently, and have a few thoughts to share about flaming people on the internet.

• On the internet in this country, it is your right and privilege to flame others and to be flamed yourself, everything you say counts, and you are responsible for everything you say.

• Disagreement is normal and people have and will continue to disagree throughout all time, and that's why there are different political parties, courts, interest groups, divorces, etc.

• Despite what you believe you see or understand, the situation might not be as you think or believe, and you might consider approaching the party privately before flaming them publicly. If someone approaches you, particularly with a lot of emotional energy, think carefully about what they are trying to communicate before you respond.

• There can be consequences to flaming and being flamed, e.g., others might avoid you if you flame someone, and someone who is flamed might stop participating and contributing.

In my situation, the person who flamed me had a good point, seemed to have stewed angrily on the subject for some time, and did not approach me privately with the issue.

While there were a couple of positive outcomes from the situation, I find myself withdrawing from participation on the internet (not necessarily a bad thing – I get more building done), reconsidering participating in and hosting events, and reconsidering writing this column.

So, here's the admonishment... Think about taking your issue to the person privately first and think about the possible consequences of the loss of the person to RC soaring before you flame him.

To let me know what you think, or to flame me privately, or publicly and make sure that I know about it, you can contact me at <sleddriver@monkeytumble.com>.

Opposite page: Richard Dolf flying 2-meter Art Hobby Boar over Eagle Butte in light air on a beautiful April day. Photo by Jay Decker