Radio Controlled
Soaring Digest
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Front cover: Peter Malák catches his RTGmodel Alatyr at the F3K World Cup, Zlín-Holešov, Czech Republic, 2018. Photo courtesy of Peter Malák.
Nikon D7000, ISO 400, 1/500 sec., f5.6, 48mm

Back cover: The picture was captured during a nice day of soaring near a French coast at a small slope near Sombre. At the end of the day there was nearly no more energy at the slope, so we started flying with our small hand launch gliders. We found ourselves having the best of fun during all day. These times are really moments to cherish! The pilot of the Marabu DLG is Benny Wachtelaer. Photo by Gunther Ferket.
Samsung SM-G930F, ISO 50, 1/280 sec., f1.7

R/C Soaring Digest

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RC Soaring Digest is published using Adobe InDesign CS6

In the Air

We received a "heads up" from David Vels via the MRSSA email list on June 9th in which he announced Spencer Lisenby had once again broken the dynamic soaring speed record with a blazing 545 mph / 877 km/h / M 0.735 at sea level in winds of 80 mph earlier in the day. This breaks Spencer's previous record of 519 mph from April of 2017.

Spencer said, "Got some good wind today. Good enough for a new World Record speed of 545 mph with the Transonic DP. Thanks Dirk Pflug!"

For those of you who question the term "transonic," here's what Spencer had to say... "Yes the wing is already experiencing transonic conditions. We even have already had locally SUPERSONIC flow over the upper wing surface. Dr. Drela provided some plots a few years ago showing local flows around M = 1.2 when freestream velocity was M = 0.65. As a result, the wing on the Transonic DP was specifically tailored to reduce these local velocities and delay the formation of lambda shock waves that cause a huge increase in drag."

Congratulations, Spencer, from all of us here at *RCSD*!

Time to build another sailplane!

B²

Edi Mauri's detailed description of his Rondone (Swift) project was originally published in the January - February 2018 edition of Modellismo, *the Italian aeromodelling magazine, Cesare de Robertis, Editorial Director. The entire article is reprinted with permission.*

Our sincere thanks to Francesco Grandi, grandi.aardvark.francesco@gmail.com, for his translation of the material from Italian to English. Publishing this article within RC Soaring Digest *would not have been possible without his efforts.*

The quest for the minimum sink speed

THE SWIFT

Edi Mauri
Photo by Marco Sartor

Background with buzzards and an albatross. In aeromodelling I always searched the minimum sink speed. I did it with free flight racing models and with unconventional radio controlled models. I tried Horten flying wings (no rudders!) and plank wings. With these layouts I couldn't get any better than 0.4-0.45 m/sec. sink speed. Flying wings have some assets: they are fast with low wing loadings and give their best in light and tight thermals. Anyway, in my opinion a conventional tail model is better performing in pure glide.

In every layout, the search for an efficient glide goes through high aspect wings: the wing alone is the source of about 70% total drag of a model aircraft. A good part of the drag comes from induced drag which decreases with growing aspect ratio.

In 2012 I built an electric sailplane with a 23:1 aspect ratio wing, the Albatross. I have a lot of imagination and all my models have names like that. The Albatross was conceived to be a good glider. Its wing used the same airfoils as my slope F1E models of the "Buzzard" series that had an aspect ratio of 16.

Results of Albatross flights were just as good, the model glided at a 0.23/0.25 m/sec. sink speed.

An aspect ratio of 23:1 led me to good performance, but it's never enough. Even then I began to think of something more extreme. Then other projects distracted

ALBATROSS DATA

Wing airfoils					
Section	Chord	Thickness [%]	@ [%]	Camber [%]	@ [%]
C1	156	7	14.6	6.52	46.4
C2	150	7	14.6	6.49	46.4
C3	120	6.6	14.6	6.15	46.3
C4	56	7.1	22.6	1.9	46.5

Wingspan	3000 mm
c.m	1,293
aspect ratio	23
C.o.G.	38%
FAI wing area	38.8 sq dm
elevator area	3.61 sq dm
K elevator	0.52
wing loading	15,2 gr/sq dm

	Weight [gr]
wing	240
elevator	15
fin	15
fuselage	80
motor	45
propeller	20
ESC	25
Rx	20
servos	40
battery	90
TOTAL	590

Wing incidence: +1° with respect to A (boom)

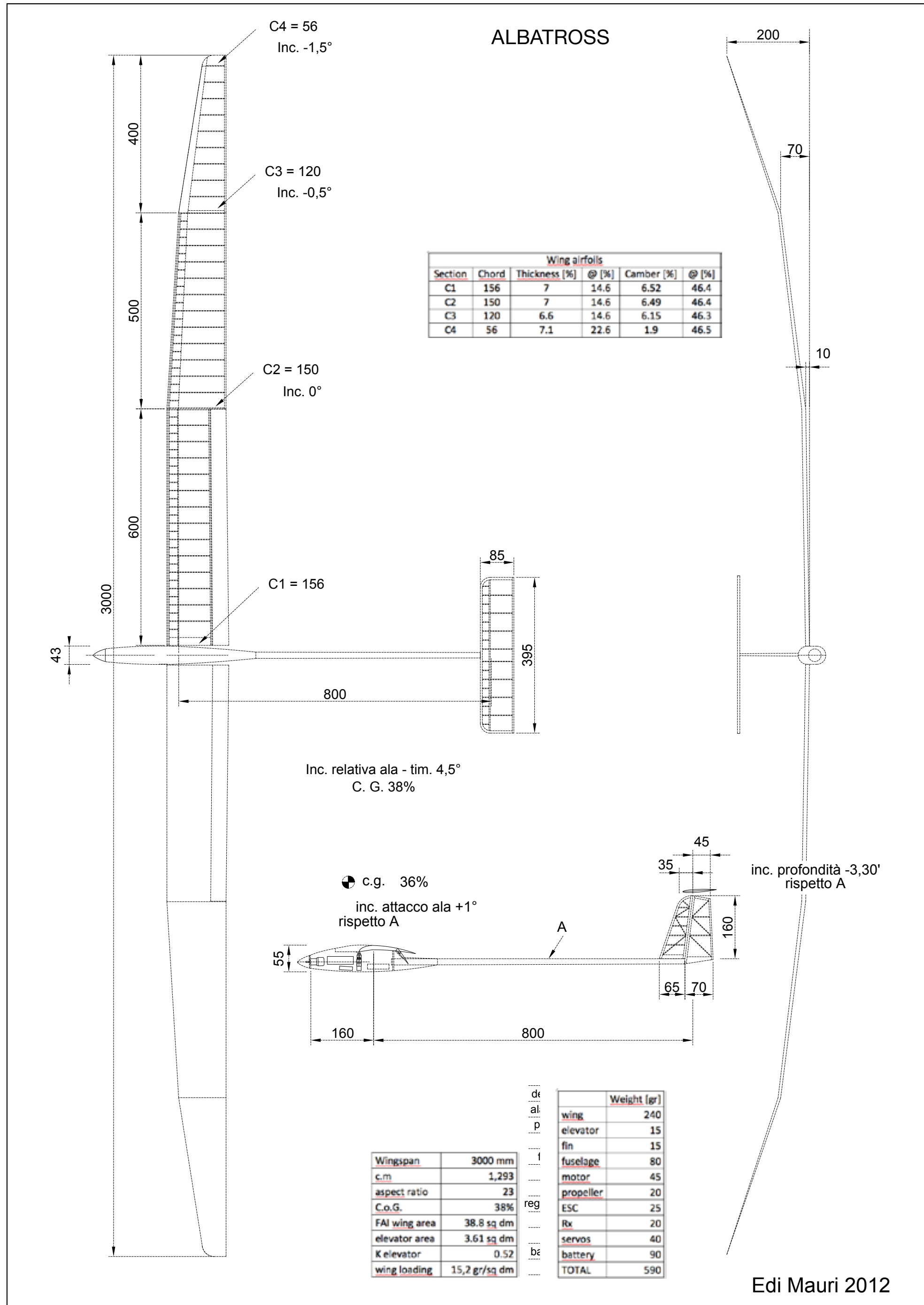
Horizontal stabilizer incidence: -3.30° with respect to A

Chord of C1: 156 mm

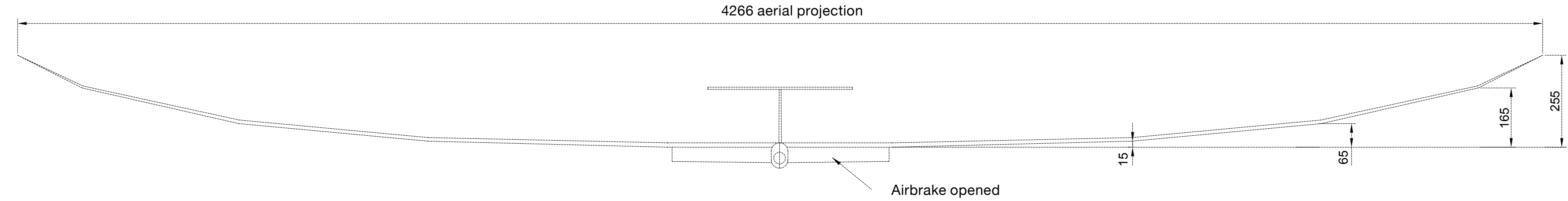
Chord of C2: 150 mm
Incidence of C2: 0° with respect to C1

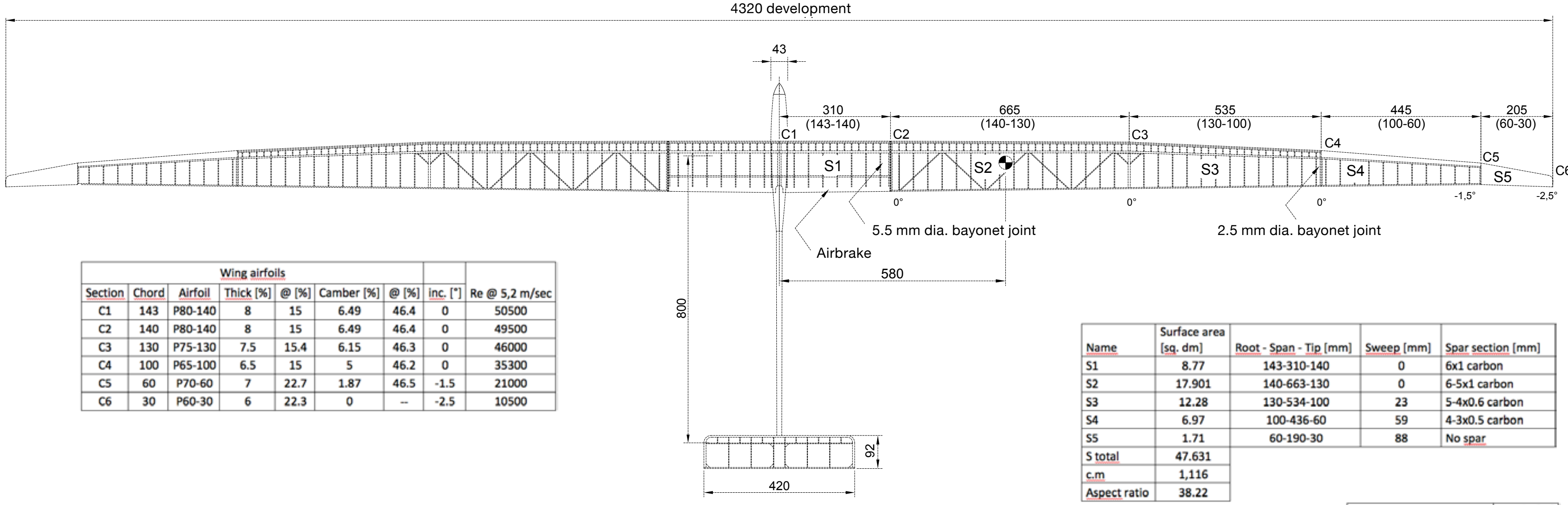
Chord of C3: 120 mm
Incidence of C3: -0.5° with respect to C1

Chord of C4: 56 mm
Incidence of C4: -1.5° with respect to C1



SWIFT

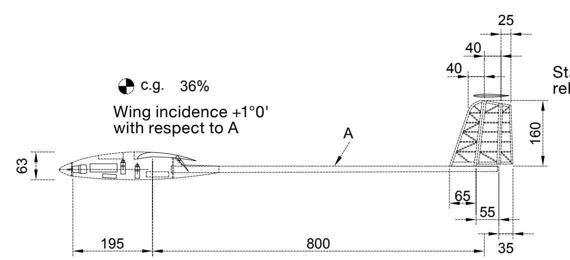




Wing airfoils								
Section	Chord	Airfoil	Thick [%]	@ [%]	Camber [%]	@ [%]	inc. [°]	Re @ 5,2 m/sec
C1	143	P80-140	8	15	6.49	46.4	0	50500
C2	140	P80-140	8	15	6.49	46.4	0	49500
C3	130	P75-130	7.5	15.4	6.15	46.3	0	46000
C4	100	P65-100	6.5	15	5	46.2	0	35300
C5	60	P70-60	7	22.7	1.87	46.5	-1.5	21000
C6	30	P60-30	6	22.3	0	--	-2.5	10500

Name	Surface area [sq. dm]	Root - Span - Tip [mm]	Sweep [mm]	Spar section [mm]
S1	8.77	143-310-140	0	6x1 carbon
S2	17.901	140-663-130	0	6-5x1 carbon
S3	12.28	130-534-100	23	5-4x0.6 carbon
S4	6.97	100-436-60	59	4-3x0.5 carbon
S5	1.71	60-190-30	88	No spar
S total	47.631			
c.m	1,116			
Aspect ratio	38.22			

Elevator area	3.8 sq dm
Static K	0.58
Biconvex asymmetrical airfoil	8,5 % thick



Name	Area sq. dm
Fin	0.83
1st rudder	0.76
2nd rudder	0.45
Total area	2
Static K	0.36
Biconvex airfoil	10% thick.

	weight [gr]
wing	401
bayonets	36
elevator	9
fin	8
fuselage, fin and servo	107
rudder servo D2019M	14
flap servo AM3028M	15
Rx	11
3S LiPO 1000 mAh	85
ESC Wasabi 12A	13
motor A10-7L+4,4:1	40
Aeronaut 12x6,5 propeller	25
ballast	56
TOTAL	820
wing loading [gr/sq dm.]	17,2

Edi Mauri 2017

me from that idea and everything was put aside.

Narrow and long wings… Swift wings.

In 2016 finally I decided to shape the old project and I began to work on the Swift. Immediately I discarded the idea of rebuilding a lighter Albatross. The field of use would be reduced and induced drag would increase with reduced glide speed. So I chose to increase the aspect ratio and the wing loading also, to achieve a glide speed slightly faster than Albatross.

The new model had to keep the main Albatross features: polyhedral wing, T-tail, pod fuselage and carbon tube boom. Four controls: motor, elevator, rudder and a middle flap (airbrake and variable camber).

At the beginning I thought about a 45 aspect ratio, but I feared that the drag gain would have been minimal and the little tip chords would have made mister Reynolds angry.

After a long time evaluating coefficients of lift, drag, moment and their charts, I defined an aspect ratio of 40.

Before beginning the building, I inserted in the calculations another coefficient — my car trunk diagonal. From there, the final decision of aspect ratio: 38.22

The model design and the Swift wing

I designed the wing planform choosing a multiple tapered wing to approximate an elliptical lift distribution. The external wing parts have a progressive geometrical twist and the airfoil evolves from cambered to bi-convex.

The Swift wing details: a spar and D-box close-up, first, second and third wing panels.

The design of a so elongated wing dictates the solution of remarkable structural problems: the wing must possess high torsional stiffness to avoid flutter and have suitable flexural strength, without forgetting lightness.

The airfoil study began from the effective Albatross scheme. The central part of the wing uses an airfoil with high camber (6,4%), the nose radius (0.63%) and the advanced maximum thickness position (15%) have the purpose of producing a big lift coefficient and a good power factor at about 3,5° – 4° angle of attack.

Finally, bearing in mind that the model is intended for gliding and thermal flying, the polyhedral wing without ailerons is still a good solution.

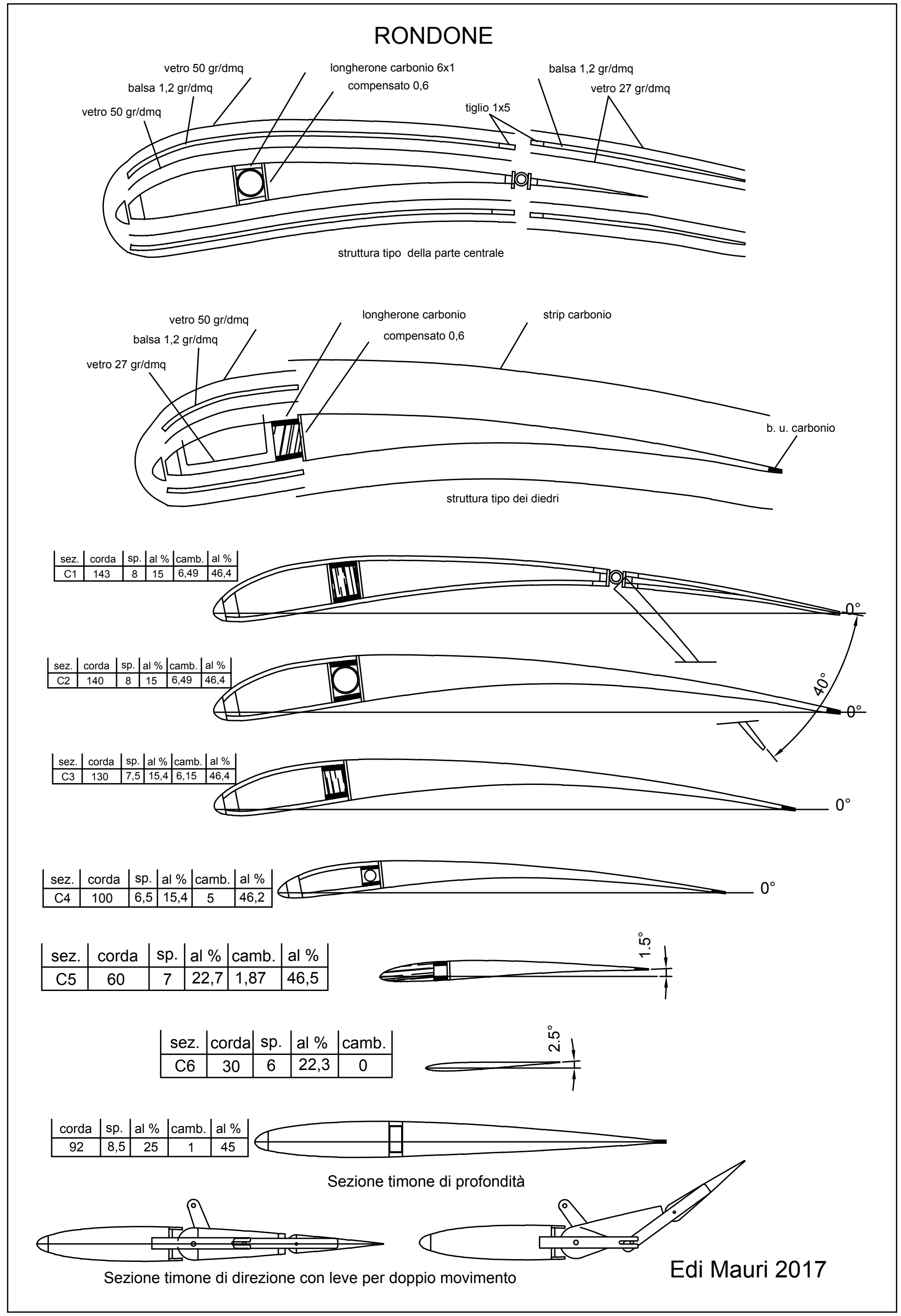
You can turn losing little height by modulating rudder with elevator... yes, but with an aspect ratio of 38 and a final chord of 30 mm? We'll see. In order to balance the wing lift I used a full-floating elevator with asymmetrical biconvex section, 1% camber and 9% thickness. A particular note about the rudder: already in the Albatross I had to enlarge the moveable part and increase the excursion because the model did not want, if not barely, to enter the turn.

In reality the problem solution was to be found in several directions, certainly the size of the rudder was not sufficient, but also because the wing tips produced a great amount of drag, creating a sort of brake opposing the rudder action. As said, I made a greater rudder and moved the CoG rearward. So, I had to reduce the relative incidence and subsequently I reduced the drag of the tips. Finally the rudder was alive again! For this very reason, the Swift rudder has TWO moving parts — this way, in the turn, the resulting airfoil is concave, smooth and still efficient at higher incidence angles in comparison to a normal rudder.

The T-tail configuration is the one I prefer, the interference with the tail boom is reduced to minimum, the high-placed elevator I think it's out of the wing wake, acts as a tip screen for the rudder and should increase its effective aspect ratio.

The fuselage is reduced to a minimum both as sections and as the length of the boom and the nose, loyal to the dogma: "What there's not, doesn't break but sometimes does not even create drag." The final weight expected was around 800 grams for a wing loading of 17g / dm^2 which guaranteed a theoretical flight speed around 5m/sec.

To bring the model up, I once again preferred a Hacker motor. Working with the "e-Calc" program, I chose a motor with A10-7L + 4.4: 1 gearbox and a 12x6.5 propeller. The on-board battery will be the same as the Albatross, 3S 1000 mAh.



An integral part of the design was the technical discussions with my friends. Past the initial phase of “Ti te xe mat!” (Are you crazy??!!). In principle they agreed with my choices, and then we start.

Never ending wings

The wing is built to have a progressive stiffness and distribution of weights; unnecessary weight on the tips would have increased the already great inertia. The wing construction technique I have been using for a long time is relatively simple, robust, and it allows to control the work step by step and does not require the use of sophisticated equipment. The table “wing dimensions” within the drawing shows: the areas of each wing panel, chords and lengths, cambers and the sections of the carbon struts.

The Swift wing can be disassembled in five pieces: one central part with the flap, two median and two end parts with tips.

The joints are made by round bayonets in harmonic steel 5.5 and 2.5 mm diameter respectively. The single parts of the wing are built over a polystyrene rig, reproducing the airfoil underside and twists.

The median part must link wing and fuselage and bear the external wing panels and so is especially tough. The central part is built on a rib structure with 6x1 mm carbon struts and vertical grain

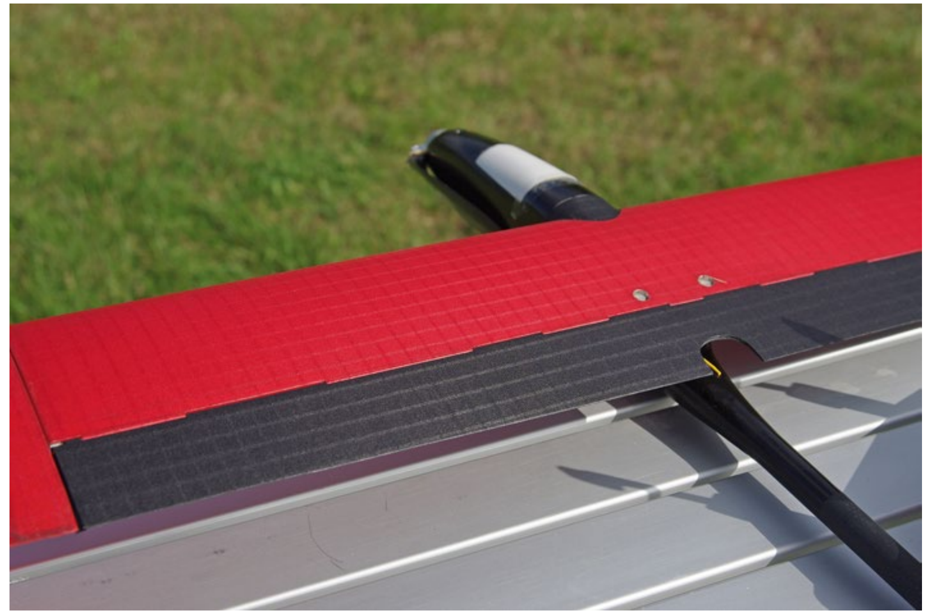
From top to bottom and left to right: wing building sequence and central panel building balsa core, full height. The spar framework is closed on each side with birch ply 0.6 mm thick.

To reduce the possibility that the strut is delaminated by the load induced by the rest of the wing, I have strengthened it with a Kevlar tow binding impregnated with epoxy resin. At each end of the strut, you can find the carbon tube seats for the 5.5 mm 80 mm harmonic steel bayonets. A second double "T" linden 1x5 strut is positioned before the flap hinge. It further stiffens the structure which has a 100 mm chord and a total thickness of only 11 mm. The central part is covered with 1 mm balsa sheets on the back and on the underside. The sheets are covered in and out with 50 g / m^2 diagonal fiberglass, all in the atmosphere, no vacuum or weights.

At the front, the structure is closed with a leading edge in lime-wood, shaped before the external glass cladding. The head ribs are made of 2 mm birch plywood and carry the holes for the alignment pins. The flap is hinged to the fixed part with 3x0.5 aluminum tubes on the back and 2 carbon hinge axis. The tubes are glued and joined with resin and microballoons in order to smooth the upper side of the airfoil. The underside slit will be closed with a double layer strip of Icarex 10 mm wide glued only to the fixed part of the wing.

The central part of the wing is attached to the fuselage with two M3 nylon screws at the rear and a 5 mm carbon pin in front of it that goes into a bulkhead of the fuselage. A fuselage mounted servo and a 3x0,5 carbon tube transmission move the flap; clips hook respectively to the servo and to the glassfiber bracket of the flap.

The middle parts of the wing are formed by the first and second dihedral. As mentioned, the union to the central part takes place with a round steel bayonet of 5.5 mm and two alignment pins while the union at the ends is with a round 2.5 mm bayonet and a pin. The framework structure has a working D-box and carbon spars tapered in section with full balsa core. The ribs are 2 and 1.5 mm thick made from block, the trailing edges are in 1x3 carbon. The framework D-boxes are curved and



The central panel with huge flap/air brake.

Vacuum bagged wing tips.

covered with 1 mm balsa, both upside and underside are internally lined with 27 gr/sqm glass and outside with 50 gr/sqm glass, both in a diagonal weave.

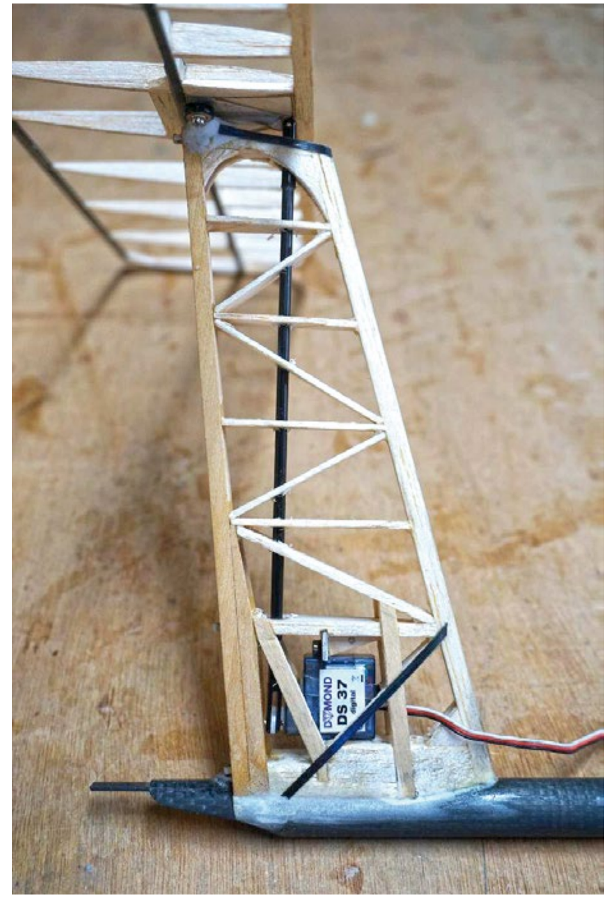
The underside glass rises on the leading edge and on the spar, this creates a closed inner box that increases torsional resistance. Before the external glass coating, the D-boxes are closed with a 0.6 mm plywood strip glued to the spar with epoxy thickened with microballoons. This, in addition to flexural resistance increasing, makes it easier to glue the ribs to the D-box using aliphatic. The upside and underside of all the ribs are covered with carbon strips glued with cyan. The two corners are joined together with a reinforcing cheek pad in 2 mm birch plywood.

The ends of the wing are formed by the third dihedral and the final tip. The third dihedral, with a root chord of 100 mm and a final chord of 60 mm, has the same structure as the previous ones, but the front part is a full balsa nose made from buffering between two reference templates. The nose is then glued to the carbon spar with balsa. The spar is slightly lower than the nose, two balsa strips equalize the difference in thickness and allow a perfect connection between the two. The nose is externally coated with a diagonal 50 gr/sqm glass.

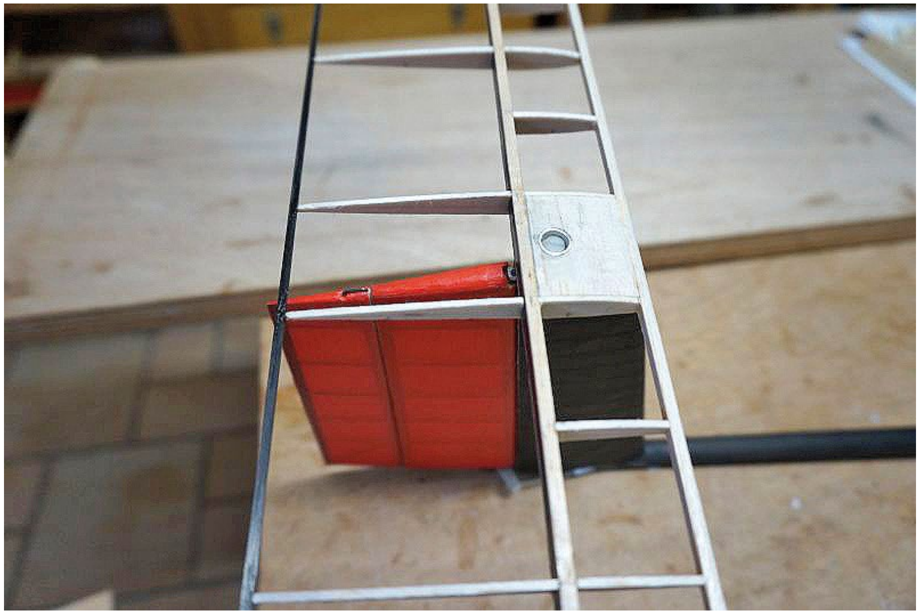
I have built tips 205 mm long with 60 and 30 mm chords. I used the technique I prefer to make the propeller blades of the Wakefield and the Coupe d'Hiver. In practice, a flat balsa sheet long and wide as the tips, keeping thickness of the airfoils, position of the maximum thickness, nose radius and so on. Then I finish with a coat of filler and sanding. Then I prepare the shapes on which I will vacuum the tips. Each shape is made up of a hardwood base with a glued balsa sheet. The sheet is profiled between two templates in order to reproduce the profile of the underside of the tips at the right twist. Each tip is covered with 50 gr/sqm diagonal glass epoxy glued, a single piece all around it. The so coated tip is locked in place on its rig with a pair of headless pins. To make the vacuum, I inserted the tips positioned on the templates in the bags and I made the vacuum with a food vacuum machine. Sealed the bags, took out the air, and just waited for the curing and all is done. Once finished, the tips are glued to the respective dihedral, reinforcing the junction with fiberglass. Given the complexity of the wing, to carry out a precise assembly I used a rig with support saddles in order to respect dihedrals, sweep angle and the correct incidences. Knowing the sweep angle perfectly will be essential for the correct positioning of the C.G. The whole wing is covered in Icarex.

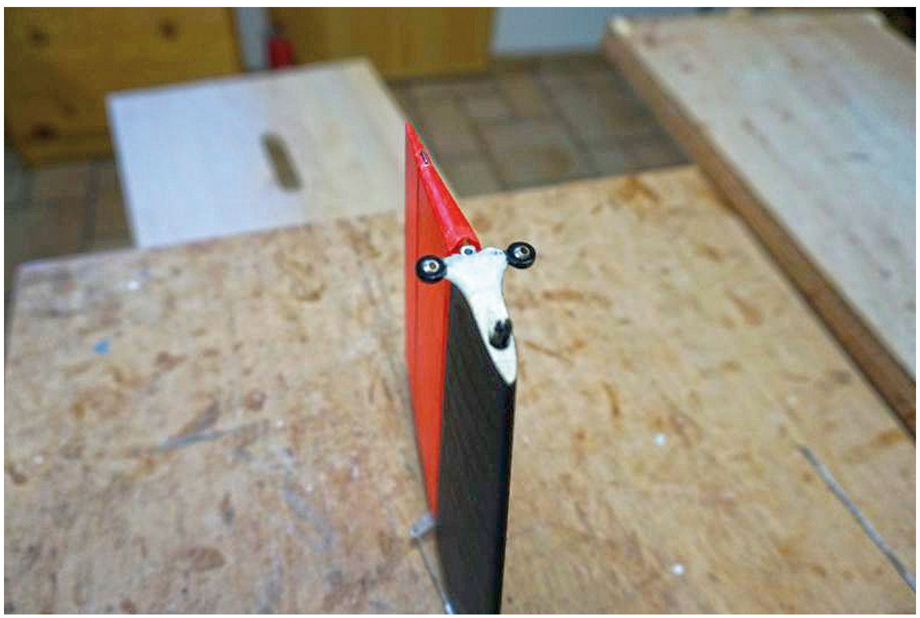
A two rudder vertical stabilizer

This time, and it was time, I mounted the elevator servo into the vertical fin. I had some doubts about weight distribution but, at the end, I have to agree with Rado, Walter and the "Mount" friends: the advantages are obvious! I needed high precision on the elevator control and a long bowden cable would never have guaranteed it, while the servo mounted at the fin base does its job with the required accuracy. The fixed part of the steering



Vertical fin showing servo location and carbon rod elevator transmission.





rudder is in balsa for the leading edge and ribs, linden for the side members. The servo is housed at the point of maximum thickness and moves the elevator by means of a 3x0,5 carbon tube transmission and clips. At the head of the fin there is the elevator fixing, formed by two uniball and joined with an M2 threaded rod and glued to the top of the rudder side member with a kevlar tow tie.

A plywood / balsa plate is fixed to the uniball with M2 nylon screws; the elevator will then be fixed to this tilting plate with an M3 nylon screw. The steering rudder has two moving parts: the first is hinged to the fin with a 2 mm carbon rod and is moved by a bowden cable from a servo mounted in the fuselage. The second, hinged to the first, moves controlled by a carbon rod with a pin sliding inside a slot. The first rudder has a completely balsa structure while the second is still all in balsa except the carbon trailing edge. The fixed part of the fin is covered in Icarex while the moving parts in Litespan.

The elevator

A horizontal stabilizer, maybe small, but is needed. In the static coefficient of stability formula the small average wing chord in the denominator does wonders. To have a K of about 0.6, which I thought was sufficient, the resulting horizontal stabilizer is really small. Better! Less weight and less drag. The stabilizer/elevator is built with ribs of 1.5 mm balsa, balsa leading edge and carbon 2.5x1 mm trailing edge. The spar is a rectangular carbon tube 3x5 mm section made with diagonal fabric and a wall thickness of 0.15 mm. To bring it to the desired height of 8 mm, I cyan glued it with two 1,5 mm balsa strips, one above and one below. This type of tubular truss gives a considerable torsional resistance to the structure so much that you can do without D-boxes or diagonal bracing ribs. In the middle, between the truss and the leading edge, there is the plate pivoted on the uniball and controlled by the servo.

The weight of the finished and covered in Litespan full floating elevator is 9.5 grams. In the event of a hard landing, little weight at the top of the fin creates little moment, the beam is less stressed and so can be lightened.

The fuselage

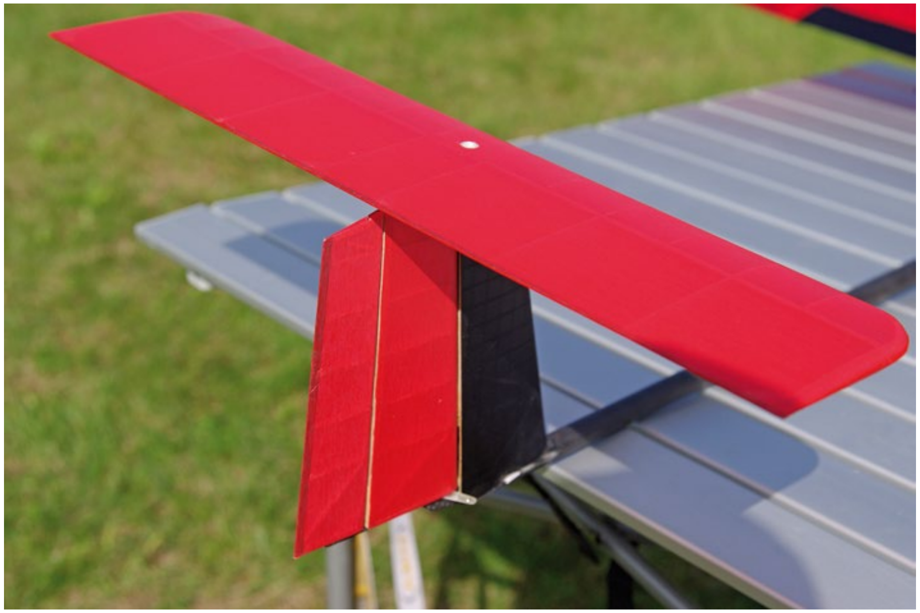
Unfortunately, a fuselage is needed to join the wing with the rudders. For this type of model my fuselages are reduced to the minimum necessary: a conical carbon beam and a fiberglass pod with some reinforcement bulkheads where needed. The pod is built with the disposable polystyrene system. I used four layers of 80 gr/sqm glass, two straight and two diagonals.

Once the beam joint is glued and filled with resin and microballoons, I covered everything with a 27 gr/sqm glass layer, two layers above the junction. On the nose, I glued the 2 mm glasswork firewall with cyanoacrylate, with about one degree of negative. Inside I strengthened the bonding with epoxy and cut glass fibers.

The wing is fixed to the fuselage with two M3 nylon screws that engage in a 2 mm Avional plate glued and screwed securely to a plywood bulkhead that also acts as a guide for aligning the tail beam. The opening at the wing and another in front of the wing are covered by a balsa hood for comfortable assembly of the electronics. The pod alone is finished with a coat of Lesonal, sanded with water, and two coats of opaque black paint, all from spray cans.

Electronics and miscellaneous

Starting from the nose, the propeller is a two-bladed Aeronaut 12x6.5 mounted on a Hacker A1O - 7L motor with a 4.4:1 gearbox. The “e-Calc” software provided an absorption of about 8 A with that propeller, so a 12 A regulator would have been sufficient. The on-board battery is a 1000 mAh 3S LiPo. For the flap control I used a Full Power AM3028M (2.5-2.8 kg*cm) servo and a D2019M (1.7-1.9 kg*cm) for the steering rudder. The elevator servo, mounted at the base of the fin, is a Dymond DS37. I have extended the original connection cable with a twisted cable of 0.15 sq mm section.



The receiver is a Jeti Rex 6 with M Vario 2 EX altimeter, in addition only for test flights an RC Multi 2 altimeter with RC TRX30 telemetry transmitter. Before testing I set the moving parts of the model in this way (measurements at the trailing edge): rudder 45 mm right and left, elevator 9 mm up and down, flap maximum downward travel 40°. Up to now I have used three mixes, motor-elevator, flap-elevator and, switch-linked, slightly lowered the flap when in the last portion of the climb the motor power drops. For starters, no exponential or dual rate on any control.

The flight test

At the test there are two spectators: Archimedes, the Merlin’s owl, and Mr. Reynolds. I often read about testing where everything goes well the first time. At my first attempt, I lost the motor pinion; the second time the regulator, although oversized, went out with sad lights, sounds and smells. The third time, the LiPo decided to give me only 350 mAh out of 1000 mAh and then not even those... I started flying seriously on the fourth

attempt. During these unlucky attempts, I pictured the laughter of Archimedes.

After the troubles I started flying seriously. Now the center of gravity at 38% proved to be too far back: the model glided well, but it was not stable with excessive reactivity to the elevator control and showed the tendency to stall in a thermal. In my head I heard an insistent voice: “I told you that you have reduced the chords too much!” It was Mr. Reynolds, who repeats it to me for a lifetime. But I have nothing in response, I insist! In the lab I measure the longitudinal dihedral: 3° are too few, to make good my airfoils you have to go up to at least 4°. I add ballast up front; it’s better but not enough. Another 10 grams and things change radically, the model is now very good, Archimedes no longer laughs and Mr. Reynolds is silent.

I can finally increase the L/D, the full floating elevator is a great comfort, now the Swift responds better to commands and the glide is stable. The efficiency is noticeable and obvious, and the landing brake is very comfortable and effective. After the changes, the center of gravity is at 36% and the difference in incidence between wing and rudder is 3° and 30’. In calm wind I can raise it to 4° (4° is not the actual incidence, we should count also induced incidence). I delay performing the calculation until adjusting the CG is completed.

The wing behaves well, no flutter, it flexes little and evenly, but what will happen down there, where the chord is only 30 mm? Surely less trouble than predicted; it seems there are no stagnation bubbles that could trigger random drift to the right or left or, worse, stalls. The model flies straight and the stall is easily manageable.

The Swift is silent, quiet, does not make the characteristic hiss even in light dives. This denotes little drag? I like to think so. In one of the last set-up sessions, an old friend of mine, Franco, was with me. There is a bit of wind, 2-4 m / sec, and merciless sun. Franco has always practiced free flying, he has a good eye for trimming and his judgment will be very important.

Edi Mauri's Swift (Rondone) in flight.

Motor on, the Swift climbs slowly and safely. At 50 meters of altitude I stop the motor and start to glide. Some turns in a thermal, upwind return with minimal loss of altitude while I hear Franco saying: “It makes an impression: despite the wingspan it turns very well, and has a great glide and is stable!”

It was what I wanted to hear. Down the brake and landing, it’s too hot. At Franco’s home or, better, in his cool cellar (he makes a great Sauvignon, in addition to the models) we discuss what we have seen. The CG location seems fine. You could try to move the center of gravity forward a little bit, but perhaps the efficiency that seems noticeable now would be penalized. Flights in the evening and early in the morning will say it’s worth it. The average climb speed is 2.2 m / sec with 400 seconds of motor available. You can improve by giving more pitch to the propeller.

So many flights and the math

Knowing the performance of my models is important to me. The tools I use are simple, they do not give me absolutely precise data, but enough to draw conclusions about the work done and make comparisons between models tested in the same way. With a stopwatch, an altimeter, and a lot of tests I collect the data I need.

In the right weather conditions, flat calm early in the morning, my son and I have made several measurements to understand what the Swift can do. We glided back and forth on a 50-meter base, after many tests we detected an average flight speed of 5.2 m / sec with a sink speed of 0.24 m / sec equal to a 21:1 glide ratio. It’s a good result; normal aspect ratio models tested with the same system got 13 - 15. At the measured glide speed a corresponding lift coefficient of the complete model is about 1.1, therefore close to what I wanted.

Now I can recalculate the characteristic Reynolds number for each wing section: ranging from 50500 at the root to only 10500 at the tips. With Profili 2 software I check the diagrams of each individual profile to its specific Re and this allows me to evaluate the choices made afterwards.

In conclusion…

Despite all the project work I feared that the such small tip chords would have created problems, but airfoils and the twists studied seem to work well. I’m satisfied: the Swift glides very well and refining the CG I think I can get close to 0,22 m / sec of sink speed.

I thought that the use of the model was limited to calm or almost conditions, but then, given the stability and robustness, with a hair of dive trim I’m using it even with 3-4 m / sec. wind and in average turbulent conditions.

There are some less positive sides that I had foreseen and attempted to minimize working on aerodynamics and on the distribution of wing weights. The model is a little slow on the yaw axis and therefore it is not very fast in the direction changes, but once the turn is set it behaves like a normal aspect ratio model and in thermal flying it tightens the turn as needed without stalling.

The reactivity to the thermals is good, but the classic entry made by turning on the side of the wing that rises can be too slow; it’s better to make a 270° turn on the opposite side and get into the thermal at speed.

The sensitivity to CG movements in even small percentages is similar to that of flying wings, and therefore the effects are considerable.

In conclusion, what can I say? The risk of a 38:1 aspect ratio repaid me. Seeing a 4,20 meter wing with a 110 mm medium chord spiralling in the clouds is a show, at least for me, of course.

And at the end, as usual, thanks to: Alcea who always encouraged me; Carlo who saves me when I quarrel with my computer; Anna, my favorite supporter; Giorgio, supplier of F1C bayonets; Franco, who bears my dissertations and for his Sauvignon; Romeo for the spars; the friends of the “Monte” for having convinced a blockhead; the Editor; and finally all those who have given me reason even when I did not have it.

2018 OMARAMA AERO TOW OPEN

Paul Chisholm, plchisholm@snap.net.nz / planesgalore@gmail.com

Every ANZAC memorial weekend in New Zealand, the majority of the country's aero towing fraternity gather at the Omarama glider airfield in central Otago in the south island of New Zealand along with the usual visitors from Australia for what is the best of aero towing RC gliders in this part of the world.

It is run in conjunction with the normal day to day "Glide Omarama" tourist glider flights, private glider operations and general aviation visiting the field, all well controlled and managed with direct radio contact between the "Glide Omarama" field control and the on-site organisers Greg Clarkson and Bevan Allen. These two do a fantastic job every year putting the event together, cutting the runway grass lower for the models, and arranging the access to the Glide Omarama facilities and model storage over night in one of the four large full size glider hangers. Not having to take big models and tugs to pieces every day is a big part of what makes Omarama special.

Ian Harvey's KA8.

This year again Jilles Smits, the well known model designer, visited from Brisbane Australia and flew some of his designs built and owned by Jack Coker from Dunedin NZ.

The event was planned for three days 21-23 April flying from 9.00am to 5.00pm each day, but due to weather conditions on the Saturday - wind in excess of 30km/hr - one day of towing was lost. This was made up in some way by Gavin Wills, renowned international glider pilot, CEO and owner of Glide Omarama, putting on a lecture supported by overhead photos of full size gliding in and around the Omarama basin and Mt. Cook discussing cloud patterns and the well known wave conditions the area is famous for. This filled in the morning; the afternoon many of the guys climbed into 4WD's and went up a local farm track to do some dynamic soaring on one of the ridges in the 30+ km/h wind conditions.

Sunday morning turned out to be a typical Omarama autumn morning with clear sky, slight frost and no wind. The 25 registered pilots from all over the country, some coming from as far away as Auckland, the other end of the country, bringing some 30+ gliders ranging in size from ¼ scale to ½ scale began the day after the usual briefings held by Greg and Bevan.

The event format is casual. There always tugs available (5# 120cc plus engined models) for pilots to fly when they felt like it. That allows plenty of social catching up with friends, some you only see at this event. The evening saw all attend a dinner at a local tourist hotel where more story telling and socializing took place with much fun had by all!

Dave Griffin and Ken McMillian investigate Daves ASH31 undercarriage issue.

Four tugs ready to go!

Michael Ward and his DLE 120 Citabrea tug.

Monday morning turned out to be similar to Sunday and another great days flying was had by all. Two of the guys, Dave Griffin and Rob Johnson, flew GPS triangles with their specialized models. This facet of RC aero towing is just starting in New Zealand.

Around 3.00pm the models were slowly packed back in their trailers and all began the long trip home, all promising to do it again next year.

This is one of the tourist high points in New Zealand. With the autumn tree colours and the bright clear air conditions in a mountainous environment it does not come much better anywhere in the world.

Above left: All eyes up!

Above: Bill Derencey's KA8.

Left: The wise men (the organizers) at the morning briefing.

Ryan Chisholm and friend inspect a 1/2 scale ASW29.

Alex Hewson's 5 metre ASW28.

Above: Scott Chisholm runs up his Piper tug. Wilga tug in the background.

Above right: B787 Cpt. Rob Johnston pumping up his tug tyres.

Right: Three of the Omarama 2018 tugs.

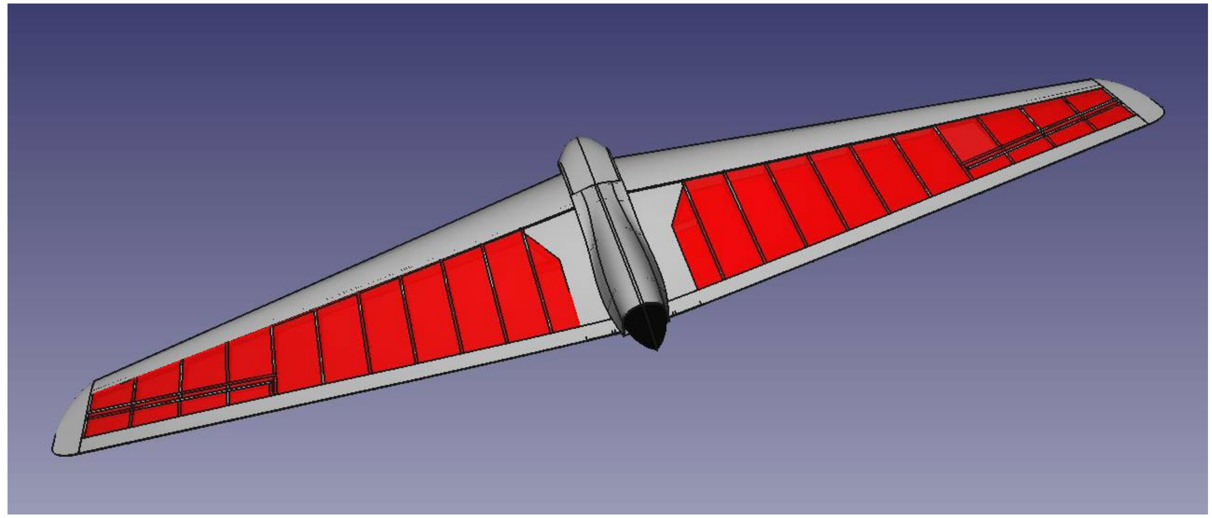
Opposite page, clockwise from upper left: Bill Derencey front seat and Gavin Wills CEO and owner of "Glide Omarama" in one of their Duo Discus sailplanes. Hayden Chisholm is the tip man on launch. Left to right; Michael Ward tow pilot, father Rob flying the Fox, and Scott Chisholm on the tip. "Team North Island."

Colin Taylor's Topaz.

FVT-V1.1

a BSLD plank

Marko Stamenovich, ftlltf@yahoo.com



This model is a product of many years of research related to characteristics of BSLD. It is only fair to mention cothe bell shaped lift distribution of Mr. Albion Bowers from NASA who unselfishly shared his knowledge and test results with us for many years. Those interested in details can look into his paper here: <https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20160003578.pdf> / <https://tinyurl.com/yb7a5wf3>.

What is unique about this model is the fact that it uses BSLD to achieve proverse yaw, directional stability and good handling qualities (which were the main goals for the design) while having very little quarter-chord sweep. Small built in sweep is only due to need to move elevons further back from the center of gravity.

Special credit goes to Frank Steve Bullôt who had trust in me to build the first test model and do test flights. Christian W. S. Ziesolleck also helped a lot by making a beautiful model and performing test flights. Thank you guys!

BSLD is designed for Cl=0.45. Root airfoil is modified EMX-07, tip airfoils is HT-14. This model is envisioned as an all-rounder, although some builders will build it as a glider. Forward CG will make it faster and will give more proverse yaw, while back position should give slightly better glider ratio.

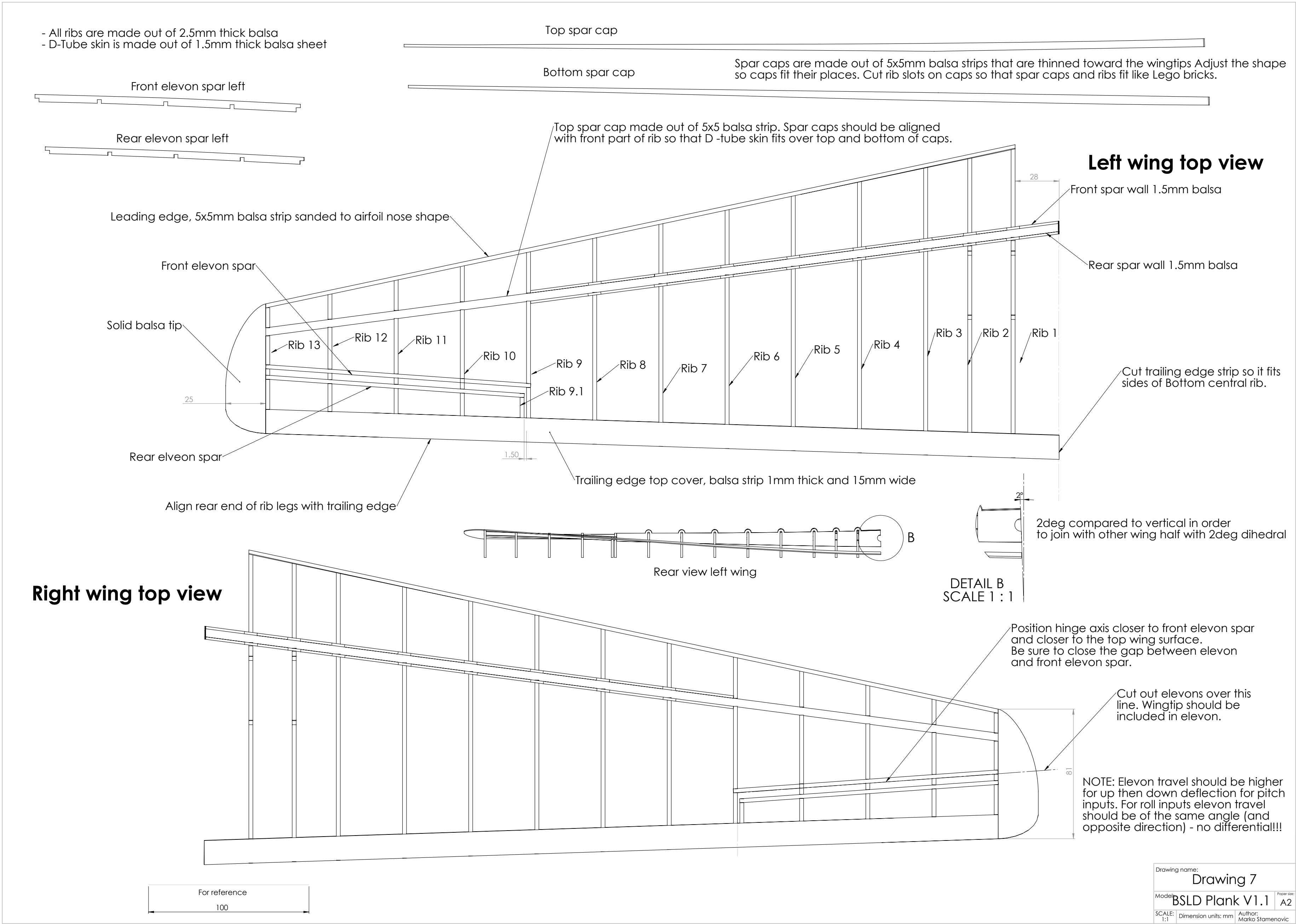
Motor should be placed in nose section adjusted so that electronic, motor and battery can fit together. This position was necessary in order to achieve desired CG range without too much ballast. Propeller is driven via long shaft.

Due to different options, design of the nose section is left to builder. Keep it small. Also, servo positions, elevon horns, rods and hinges are left to builder to adjust based on chosen parts. Be sure to close elevon gaps.

Most parts are to be laser cut. Due to small size it would be very hard to accurately cut parts by hand. DWG files are provided along with drawings. Every file name includes material, material thickness and numbers needed. Drawings contain A4 format pages and a single A2 size page with 1:1 scale drawings for building model. You only need to print the A2 drawing. An assembly manual is also included.

BTW, this is the first RC model I have ever designed. Hopefully there will be more of those, research is far from over. Parts for FVT-V2 are being cut these days...

Anyone notice any mistakes in plans please report it to me via email so I can fix it. There are a lot of details there, so some error could have slipped through.


- All ribs are made out of 2.5mm thick balsa
- D-Tube skin is made out of 1.5mm thick balsa sheet
Top spar cap
Bottom spar cap
Spar caps are made out of 5x5mm balsa strips that are thinned toward the wingtips Adjust the shape so caps fit their places. Cut rib slots on caps so that spar caps and ribs fit like Lego bricks.
Front elevon spar left
Rear elevon spar left
Top spar cap made out of 5x5 balsa strip. Spar caps should be aligned with front part of rib so that D -tube skin fits over top and bottom of caps.
Left wing top view
Front spar wall 1.5mm balsa
Leading edge, 5x5mm balsa strip sanded to airfoil nose shape
Front elevon spar
Rear spar wall 1.5mm balsa
Solid balsa tip
Rib 13
Rib 12
Rib 11
Rib 10
Rib 9
Rib 9.1
Rib 8
Rib 7
Rib 6
Rib 5
Rib 4
Rib 3
Rib 2
Rib 1
Cut trailing edge strip so it fits sides of Bottom central rib.
Rear elveon spar
Trailing edge top cover, balsa strip 1mm thick and 15mm wide
Align rear end of rib legs with trailing edge
2deg compared to vertical in order to join with other wing half with 2deg dihedral
B
Rear view left wing
DETAIL B
SCALE 1 : 1
Right wing top view
Position hinge axis closer to front elevon spar and closer to the top wing surface.
Be sure to close the gap between elevon and front elevon spar.
Cut out elevons over this line. Wingtip should be included in elevon.
NOTE: Elevon travel should be higher for up then down deflection for pitch inputs. For roll inputs elevon travel should be of the same angle (and opposite direction) - no differential!!!
For reference
100
Drawing name:
Drawing 7
Model:
BSLD Plank V1.1
A2
SCALE: 1:1
Dimension units: mm
Author: Marko Stamenovic

ONE DAY ONE SLOPE ONE MODEL TWO DIFFERENT FLIGHTS

Tomasz Lis, listomasz85@gmail.com

This spring I had a very interesting day on the slope. I would like to share my impressions with readers of *RCSD*.

It was the first truly spring day of the year. The wind was light and the sun was shining strongly. I packed the 1:4 Komar bis model and drove to a slope only 25m of height.

I made the first flight before noon. The wind was weak (3-4 m/s) but it was enough to fly on the slope. During this flight, I caught the little thermals several times. All the time the sky above the slope was cloudless. The cumulus was visible on the horizon.

After one hour of flight the wind stopped blowing. The model landed on the top of the slope.

Despite the windless weather, I decided to stay on the slope and wait for better conditions.

In the afternoon clouds began to form also above the slope. It got hot. Cyclic short-term gusts of wind spoke about the thermal activity of the slope.

I decided to use one of the gusts and start again. I strongly released the model and just after the start I flew to the right. The glider began to fall, there was no lift.

I turned left and flew along the slope. Turbulence appeared and after a moment the model found a strong thermal at the last minute because it was already below the starting point.

Thermal lift was very strong. I started a tight circulation.

After a few minutes I had a height of 420m. It was enough to fly further in search of the next thermals.

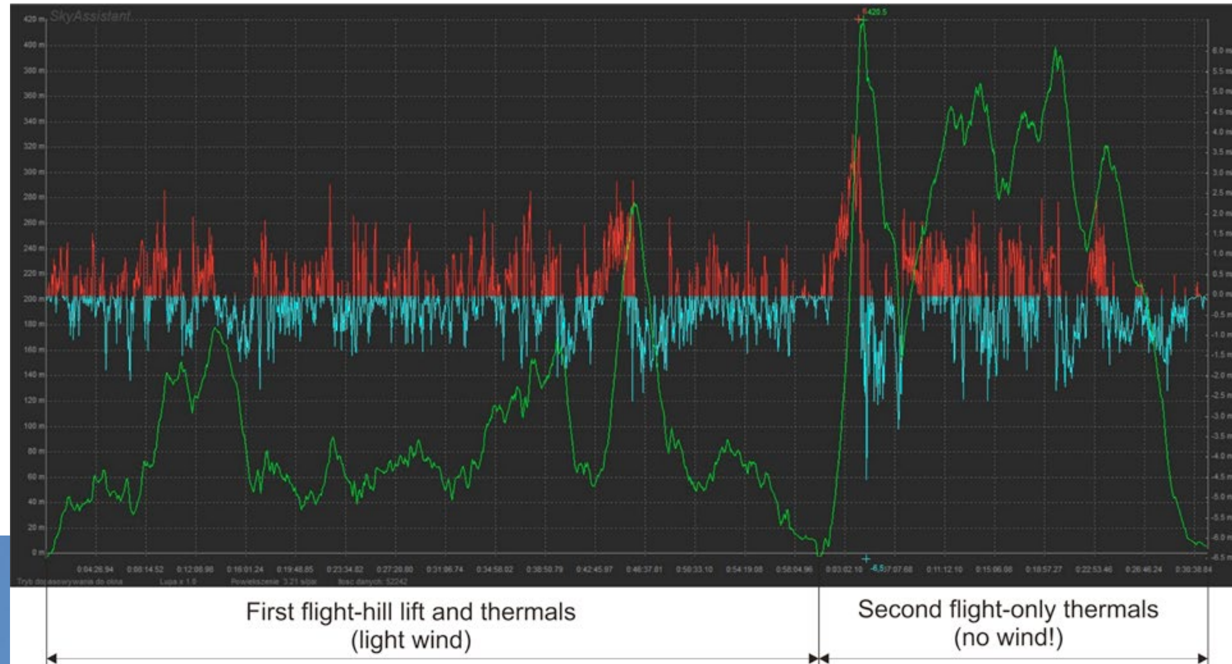
This flight, although it took place over the slope, was a thermal type - the wind did not blow. Despite the small height of the slope and the hand start the model managed to catch the thermal lift and continue the flight.

It was one of my most beautiful days on the slope. Two flights gave me a lot of experience and proved that flying over the slope is also possible without wind.

So see you on the little slopes in Poland!


My 1:4 scale Komar bis model.


SP-766


First flight-hill lift and thermals
(light wind)
Second flight-only thermals
(no wind!)

CEWAMS visits Eastern Washington

Philip Randolph, amphioxus.philip@gmail.com

The timothy hay and last year's spuds LZ, with a free car wash. A welcome alternative to the usual CEWAMS rocky landing zones. Flying Eagle Butte and the Horse Heaven Hills, Eastern Washington.

Eagle Butte, Friday morning. Steven Seim launches his Opus 2m / RG14. He describes it as "very smart and speedy."

Rick Jay and Tom Provo plan to leave north Seattle at gawrd-waffle-early 6 AM Friday morning, for the world famous flying site, Eagle Butte, in central Washington State. Also Steve Seim. Tomorrow Steve Allmaras and his nephew Rasheed Adamu.

Me, I don't like 6 AM, so I leave the day before and camp on the east end of Saddle Mountain.

Friday morning Eagle is thumping. 29 mph. So we all fly stuff. It calms down to a steady 16 in the afternoon. The pics tell enough story.

Mid-Columbia Soarers VP Glen Reiboldt (last photo) shows up, first with a rudder-elevator ship, and then with a glider optimized for very high winds. MCS holds a lease on Eagle. AMA and MCS membership is required to fly here. Worth it, and not just for the potatoes.

Steve Seim's Mark Levoe 100" Super V. Steve says, "I love the classics." Medusa clouds.

Piles of planes by timothy hay and spuds. Rick's Energic, 48" Me109, 60" Fun One, and red yellow Rock Breaker. Tom's Pike Superior fuselage, Sparrow (in back), 2m Ion, 96" Energic (red).

Opposite page, clockwise from upper left:

Tom Provo launches his 96" Energic while Steven Seim flies in the background.

Rick Jay launches his Ahi. He rebuilt it after a previous trip, when he passed his transmitter to a rusty pilot.

Two planes over Eagle Butte.

Tom launches his 2m Ion.

Camping at SDR Friday night

Steven Seim and I camp at Sam's Dirty Ridge Friday night. Steve has designed and built a number of the DS speed record gliders.

In the morning the winds are precisely downhill. So we invade the local IHOP and head back to Eagle. At Eagle the winds are precisely downhill. While we wait Steven cools off in the irrigation sprinkler, which trundles slowly by. It washes dust off cars, and makes mud of what is left.

Rick and Tom show up. And then Steve Allmaras and his nephew Rasheed, high school sophomore. We all head for Kiona, a north facing bit of the Horse Heaven Hills ridge.

The lift is so light that at first only Tom flies his Alula. Steve Allmaras flies his Phoenix Evo 2.6m foamy, which has a motor. Everyone is saying, "I wish I'd brought my hand launch."

I fly my Mini Ellipse. It stays up between sink cycles. About 2:30 I head 70 miles east.

Saturday morning with adverse weak winds, Steven Seim pretends he is also a car in the Eagle Butte irrigation sprinkler car wash.

Saturday noon and light winds at Kiona. Steve A. flies his Phoenix Evo (electric) and Tom flies his Alula, discus launched frequently.

Saturday night camping at SDR. Truck theft. Sunday imprecise winds.

I wind my way east along the Horse Heaven Hills ridge above Kiona. It's about 11 PM. Bumpy. I take a wrong turn in the dark. I back up through wheat fields. Turn right. Lights. Two trucks. I park.

Kevin: "Till we heard you call out we wondered if it was Philip or someone out to kill us."

Philip: "Those aren't mutually exclusive."

Kevin Hughes, his son Ender and Andy Page spent the day at the Yakima Aerotow. They met up with the crew about 5:00 at Kiona, where the winds had picked up to steady light lift with thermals. I'm back from visiting a couple old friends in Walla Walla.

So we stare up at Cassiopeia and the summer triangle Vega, Deneb, and Aldeberon until about 1 AM. And down at the freeways and lights of West Richland, the town that grew up as the support site for the Hanford Nuclear reservation, WWII plutonium production site.

Tom's Alula, complete with raptor talons, floats below a whispy cloud.

I claim that the lights of the cars going away from us look red because of the Doppler effect. Andy says, “Red shift.”

The local lights are impressive also. Kevin says, “Watch this.” He opens the lid to his cooler. It’s all lit up inside with blue LEDs. He says, “It’s my pimp cooler.” See? Exciting stuff happens on slope trips.

Andy drives a big F 150 extended cab. I’m still wandering around sticking planes under my CRV when its car alarm goes off. Quote, Andy: “What the?” In the next ten minutes it goes off two more times. Evidently someone is trying to steal his truck. Obviously. Car alarms don’t lie.

The next morning, as Kevin is frying up hash browns, sausages, and scrambled eggs it goes off a couple more times. Andy apologizes for Ford but I tell him I appreciate the humor. He explains, “There’s something about the wrong sequence of opening the suicide doors that it doesn’t like.” It sounds like one of those Click and Clack episodes where they say, “You turn the radio on and the windshield wipers go.”

There is a stream of hikers right through where we parked the trucks. An athletic older guy explains to Kevin that while rock climbing he got hit in the head by a rock. Revenge of the rocks. He’s living, but can’t stop talking. A hundred yards away a woman coaches three women doing squats and aerobics. A woman carries her dog up the trail. A guy follows. I say, “Why don’t you carry her dog?” He says, “I’m not with her.” Andy says, “Give it time.” Twenty minutes later they are talking, walking down the trail. The dog is forced to walk, albeit downhill. See? Exciting stuff happens on slope trips.

Waiting at Eagle Sunday morning with the 13,000 gallon per hour dishwasher.

The winds are light and precisely down slope. We go to Eagle Butte, which faces the opposite direction, southwest. There the winds are light and precisely down slope.

The forecast is for SW winds building after about 2 PM. Kevin and Andy head back to Seattle. While I wait for the others I

Opposite page:
Top - Steve Allmaras’ Phoenix Evo.
Lower left - Rasheed on the buddy box flies the Evo while Tom hovers the Alula.
Lower right - Tom catches the Alula. Rasheed still on the buddy box. The plane to the right is Steven Seim’s Mark Lavoe 100" Super V.

The author's Jaro Muller Mini Ellipse just after it settles gently in the hay and spuds.

Rick launches Tom's 3.3m Pike Superior.

munch leftover fajitas and let the local sprinkler system wash the doggie box so I won't have to smell it all the way back to a trash can. Yep, I let it wash my CRV too.

Good flying at Eagle Sunday afternoon

Rick and Tom and Steve and Rasheed show up. The winds are still precisely downhill. I take a nap. That's because somebody turned that big light thing in the sky on at 5 AM. Short on sleep.

A while later they start yelling, "Philip, wake up." I pretend not to hear. For a while.

Philip: "You got me up for this?" There is an intermittent upslope wind and occasional weak thermals. Tom intermittently keeps his Alula up for a couple inter-minutes. I dream of crawling back into my sarcophagus and covering myself with dirt.

Instead I intermittently charge planes and munch diet cola while Tom intermittently flies his Alula and Rick even more intermittently flies his reconstructed Ahi. Intermittently means they don't stay up long.

Steve assembles his Spinner, a 60" DLG with an EPP fuse. It should be great for this intermittency, but it won't pull out of a dive and its good deeds are interred with its bones. Booms. It breaks its tail boom off. Bother. Fixable.

I put up my Jaro Muller Mini-Ellipse. Light 60" V-tail. It stays up for an hour and uses 60mah of its 2S LiFePO4. Not quite a DLG, but good for light air.

True to forecasts, the wind builds through the afternoon, until by 5:00 it's in the 20s.

Steve Allmaras ready to launch his 60" Scout Bee while Rasheed looks on.

Our Mid Columbia Soarers VP Glen Reiboldt with his Scream. It did, with its pusher prop. And in 20+ winds it sloped just fine.

The fastest 60" V-tail by far is Rick Jay's homebuilt. He used a Zone V2 airfoil, an airfoil optimized for dynamic soaring. Very low drag at high speeds. Full ailerons at about 30% of chord. In thermal mode they flex down a few mm. About half that in "cruise." Flat for speed. "Look." He flips a switch. "That little bit of flap and it just goes up."

Four of us do fast passes, right to left, circling out. I fly my 60" Mini-Blade. (No tip stalls! Adding washout worked!) Tom flies his 2m Ion. Steve flies his 60" Scout Bee. Fast for an EPP chevron, it almost keeps up. "It's new. It isn't all scuffed up yet." Good flying.

Glen shows up again. He flies a mostly carbon 2m V-tail Salangane. Fast. All good things.

6:30, the rest of the Seattleites leave. I stick around and fly the Mini-Blade.

Glen puts up his Scream. Little twin boom pusher. Oddly it slopes well. He says, "It has plenty of room for ballast." I say, "Instead of ballast you've got motor." Each are things that increase speed, and increase glide in relation to the total external force, whether from weight-including-ballast-weight or from the vector sum of weight plus thrust. So even power planes are gliders (again, in relation to total external force). Which is to say that when he hits the throttle it screams (fairly quietly) in an incredibly fast vertical that becomes a loop.

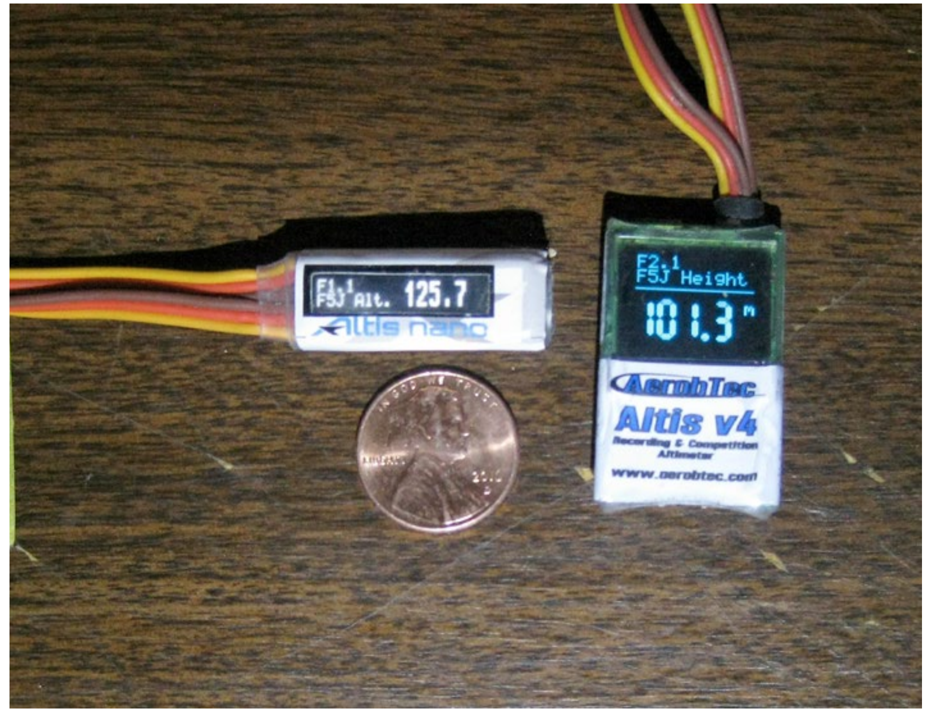
He lands it in the timothy hay with spuds.

Aerobtec Altis Nano AMRT for ALES/F5J

Greg Douglas, gdouglas@repeat.net

I've been using the Aerobtec Altis V4+ for 2 years now, and it performs flawlessly. I had an issue of not being able to get the 'Emergency Motor Restart' function to work, but tech support at Aerobtec is very good, despite the 8 hour time difference between MDT and Slovakia. I was able to resolve my issue (Spektrum motor channel endpoints) within a few email exchanges.

I first heard about the Altis Nano AMRT earlier this spring, and inquired about when they would be available. Aerobtec was kind enough to send one of the first production models for testing and review.

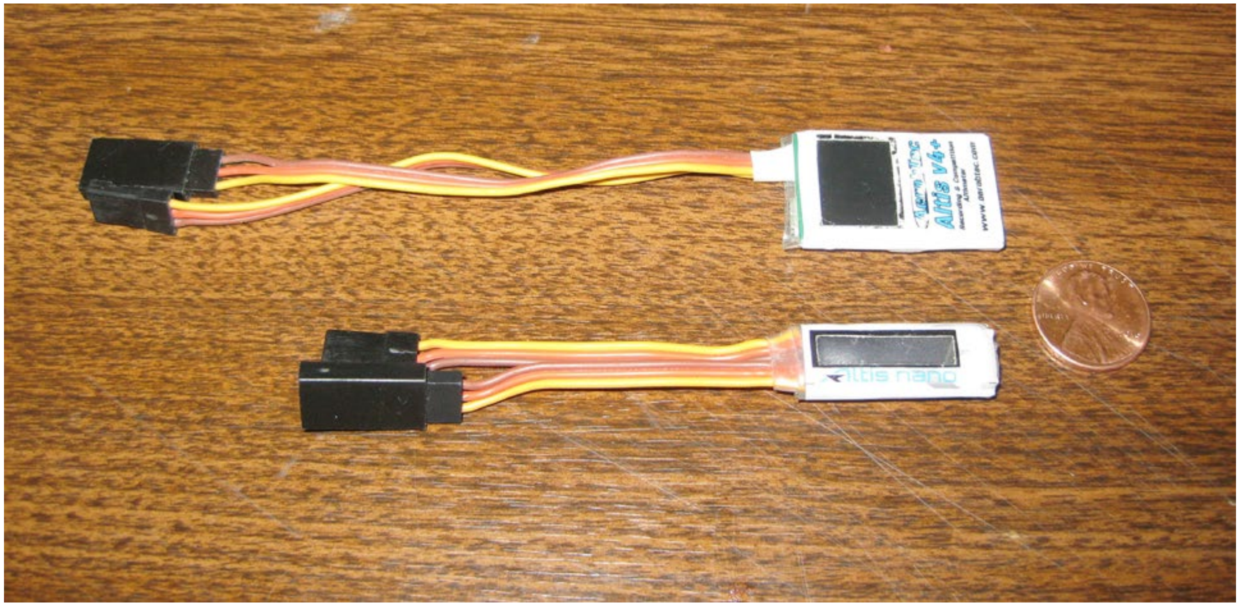


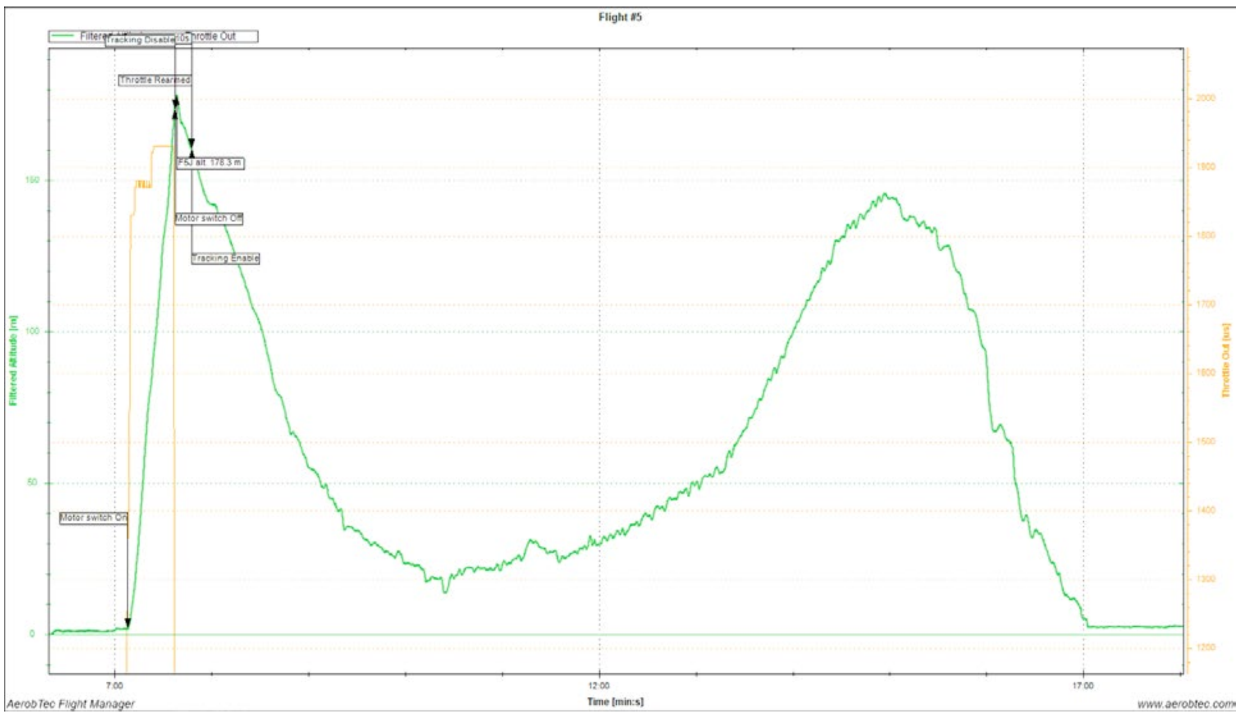
The Altis Nano is noticeably smaller than the Altis V4+, but has exactly the same functionality, including the Micro USB port, and a small port into which you can plug either the telemetry converter, or for the optional keypad for configuration in the field without a computer. The same micro keypad and also the larger 'Device Terminal' that work with the V4+ work with the Nano.

The device has several different firmware versions available, including an ALES version, with 100, 150, or 200m launch height, a pure F5J 'plug and play' version (this is the version that was certified with the FAI for F5J use), and a 'generic' version, where every parameter is configurable, but has several presets for ALES or F5J.

I have tested the ALES version in a club contest in April, and the 'generic' version (set for F5J with emergency motor restart enabled) in the F5J in the Desert 2 day contest last week. I have not tested the 'pure' F5J version of the firmware.

Early testing revealed a bug with the generic firmware where the emergency motor restart did not work. An email and log file sent to Aerobtec, and 24 hours later, they had fixed the bug and made the new version available, which works perfectly.





The Altis Nano works just like it's supposed to. I find the configuration using the 'Flight Manager' software for Windows very easy to use. Some people may have trouble reading the very small OLED display, but I am blessed (?) with being near sighted, so I could read it perfectly. It is slightly less expensive than the Altis V4+. One huge advantage to using the Altis Nano (or the V4+) is the logging that it does. It logs altitude, motor signals in/out, battery voltage, temperature, and some calculated variometer functions.

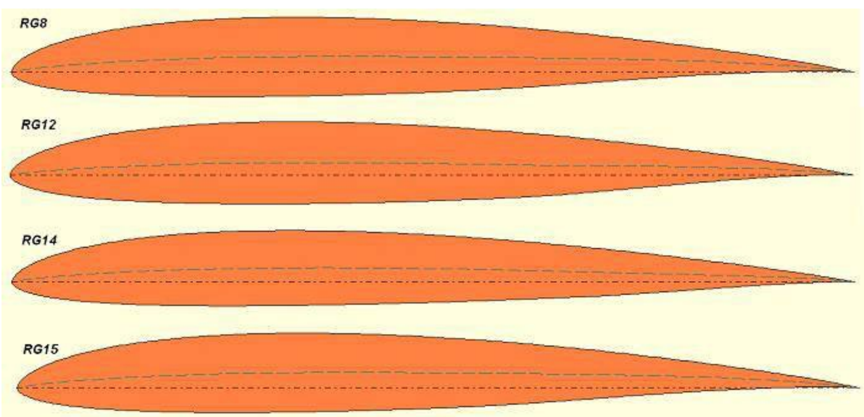
Attached is a picture of the Nano next to the V4+ for size comparisons, and also a flight log from Round 3 of the preliminary flights in Las Vegas, showing a save from 14m at 3 minutes! I ended up with a 9:54 and a 40 landing, but could only manage a 5th place in my Round because I launched to 178m (the wind had really picked up by this time). The four pilots who beat me had all launched to < 100m. That's F5J!

According to the Aerobtec web site, the Altis Nano is available from four distributors in the US, but only these two list the Nano on their web sites:

Aloft Hobbies
http://alofthobbies.com/

Soaring USA
https://www.soaringusa.com/

Rolf Girsberger



Dear friends,

With great sadness I learned that Rolf Girsberger has passed away.

Rolf made tremendous contributions to competitive RC soaring with his RG airfoil series, which had a great impact in F3B in the late 80ies and 90ies. Nic Wright and Denis Duchesne won F3B world championships with airplanes equipped with RG 14 and RG 15 airfoils respectively. There were A LOT of F3B and F3F airplanes that used his airfoils back in the day and many avid slope flyers had at least one plane that used RG airfoils. I had plenty of them.

His airfoils were a benchmark for two decades and were created with code he wrote in Fotran on punchcards.

He was a team member of multiple swiss F3B teams and was interested in the sport long after he stopped competing. I remember that he often showed up at swiss championships and was interested in the latest trends.

At the bottom of this link is an interview I had with him prior to the 2007 F3B worlds: <http://www.teamusaf3b.com/what-is-f3b/f3b-the-optimization-of-different-flying-states>

Condolences to his family and friends.

Sincerely,

Reto

Reto Fiolka, reto_fiolka@yahoo.com

Slope Soaring Candidate

Boeing XF8B-1

http://www.jitterbuzz.com/manreal/XF8B-I__01.jpg

We were introduced to the Boeing XF8B-1 through a comprehensive book by Jared A. Zichek which we found at the Seattle Museum of Flight. Intrigued by the design of an aircraft with which we were not at all familiar, we purchased the book and were immediately impressed by several features of the XF8B-1 which would make it a fantastic PSS candidate. Those features include a very slim streamlined fuselage, a bubble canopy which allows a good view of any included cockpit details, a relatively small cross-section belly scoop, and a large spinner which smooths the transition to the engine cowl. Additionally, with the exception of the vertical tail, the flying surfaces are straight taper with slightly rounded tips which will make for simple construction.

The Boeing XF8B (Model 400) was a single-engine aircraft developed by Boeing during World War II to provide the United States Navy a long-range shipboard fighter aircraft. The XF8B-1 was intended for operation against the Japanese home islands from aircraft carriers outside the range of Japanese land-based aircraft. Designed for various roles including interceptor, long-range escort fighter, dive-bomber, and torpedo bomber, the final design embodied a number of innovative features in order to accomplish the various roles. Despite its formidable capabilities, however, the XF8B-1 was fated never to enter series production.

The XF8B-1 was, at the time, the largest and heaviest single-seat, single-engine fighter developed in the United States. Boeing called the XF8B-1 optimistically, the “five-in-one fighter” (fighter, interceptor, dive bomber, torpedo bomber, or level bomber). It was powered by a single 3,000 hp (2,200 kW) Pratt & Whitney XR-4360-10 four-row 28-cylinder radial engine, driving two Aeroprop three-bladed contra-rotating propellers.

The final configuration was a large but streamlined design, featuring a bubble canopy, sturdy main undercarriage that folded into the wings, and topped by what appears to be a variation on the B-29 vertical tail.

The contract for three prototypes (BuNos 57984–57986) was awarded 4 May 1943, although only one was completed before

http://www.boeing.com/resources/boeingdotcom/history/images/xf8b_1_hero.jpg

http://aviationarchives.blogspot.com/2017/11/boeing-xf8b-1-photos.html

http://aviationarchives.blogspot.com/2017/11/boeing-xf8b-1-photos.html the war ended. It first flew in November 1944. The two remaining prototypes were completed after the war, with the third (BuNo 57986) evaluated at Eglin Air Force Base by the United States Army Air Forces.

By 1943, the U.S. Navy was preoccupied with a requirement for a long-range shipboard aircraft suitable for operations against the Japanese home islands from carriers cruising in the Pacific outside the normal range of Japanese land-based aircraft.

Boeing responded to the Navy requirements with Specification SD-349, an aircraft with a top speed opf 342 mph, a minimum speed of not more than 79 mph, a service ceiling of at least 30,000 ft., take off in a 25 kt wind of 262 ft., and a rate of climb of 3,760 feet per minute.

Design work began in short order with a mockup available for review in October of 1943. The Boeing company designed a large, multi-purpose fighter suitable for such operations and which, on May 4, 1943 was awarded a prototype development contract as XF8B-1.

The result, however, was a singularly massive airplane powered by the then-new Wasp Major 28-cylinder XR-4360-10 “Corncob” radial engine. The XF8B-1 was even larger than the Douglas Skyraider, then also under development, and included an internal bomb bay.

Boeing engineers developed a dimensionally large airframe with a smoothly-contoured fuselage from nose to tail. Wings were set low on the fuselage sides and ahead of midships.

The spacious cockpit was centrally-located with the pilot under a useful teardrop canopy with good vision to the sides of the aircraft, above and behind. The engine was of a slender form but its installation necessitated a rather long nose assembly making ground running difficult.

The fuselage tapered nicely into the empennage to which a large, rounded vertical tail fin was fitted (ala the Boeing line of famous World War II bombers).

Horizontal tailplanes were affixed to the fin’s sides in the usual way.

The engine, held in its forward-set compartment, drove two three-bladed propeller assemblies in a contra-rotating arrangement. This supplied the necessary thrust from the ultra-powerful engine installation while negating the effects of torque encountered when using just one three-bladed propeller as seen on many aircraft of the period.

The undercarriage was of the “tail-dragger” arrangement which used two main landing hear legs. These retracted into the wings after pivoting at 90-degrees. The tail wheel was also retractable to keep the aircraft as streamlined as possible when in flight.

The initial flight of the prototype proved the design a general success though some minor elements had to be revised.

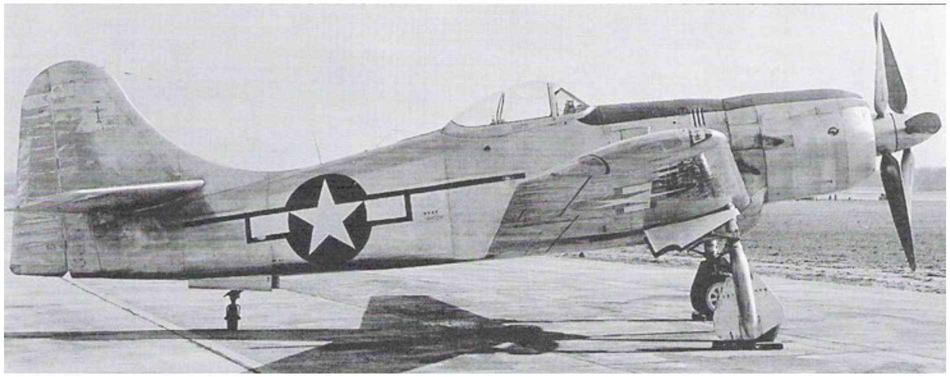
The second prototype airframe was completed in January of 1945 but this had to wait for an available powerplant to be delivered and installed and thusly did not fly until after the war.

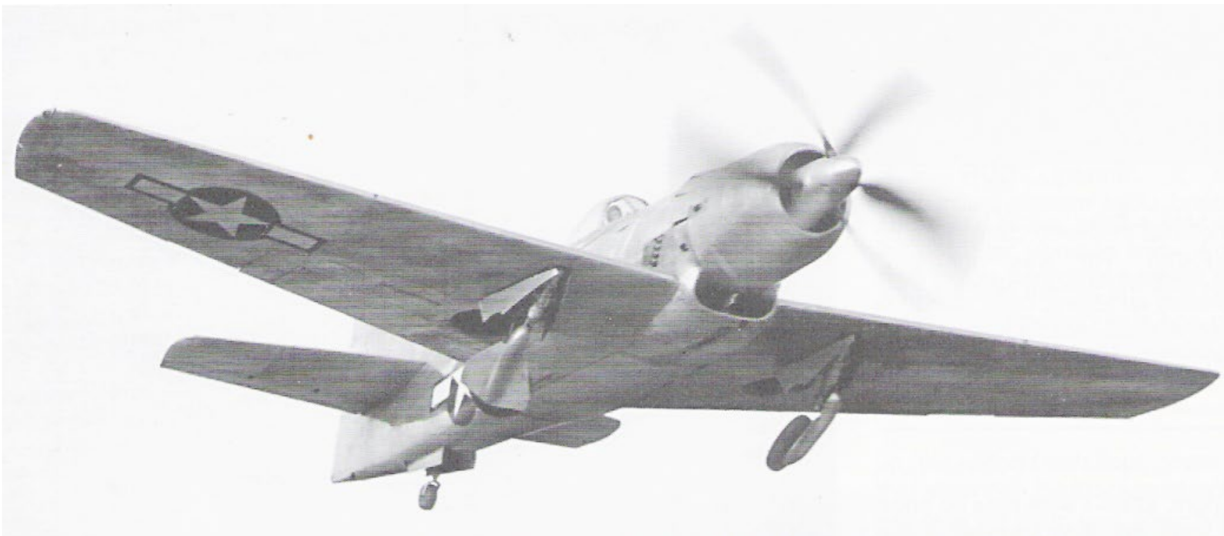
Service trials then began for Prototype One which ran from mid-March 1945 to mid-April and the USN liked what Boeing had to offer on the whole despite it being a more expensive and heavier aircraft than first envisioned.

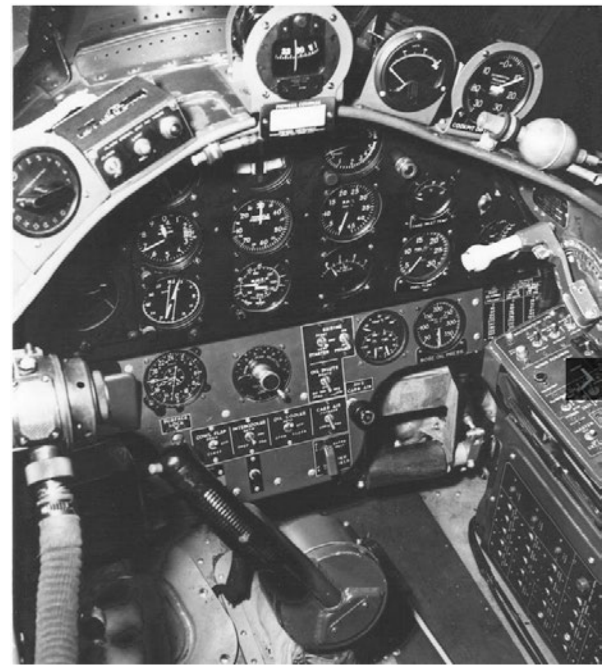
It was about this time that the USN was close to agreeing on a production course with Boeing though Boeing’s commitment still lay with U.S. Army (and later U.S. Air Force) bombers and the USN had begun serious experimentation with jet-powered aircraft on carrier decks before the war’s end.

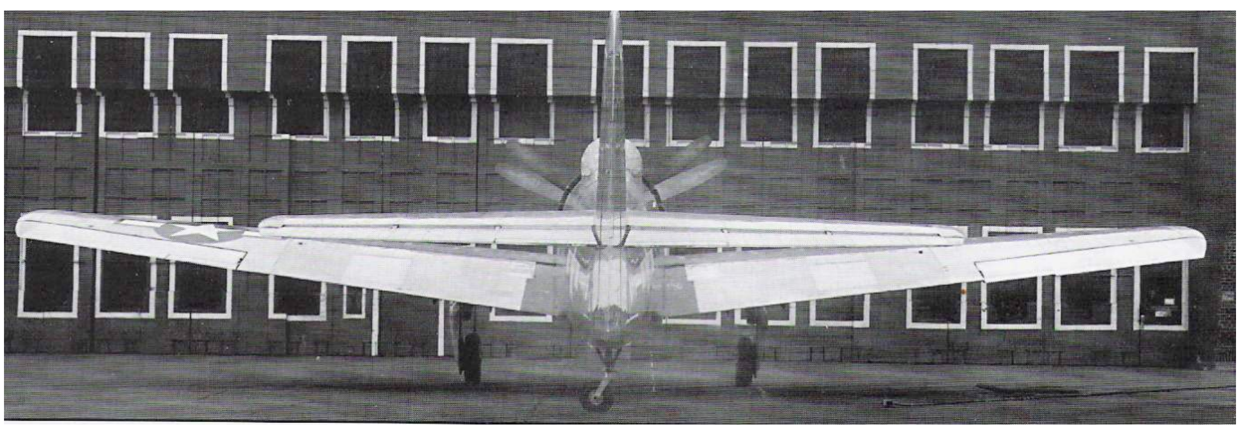
The conclusion of the war in Europe came in May of 1945 and the Pacific War ended that September, bringing about an end for the “do-everything” carrier-based fighter.

The piston-powered fighter, as a whole, had more or less reached its apex in performance by the end of the war, capping its reign in the 3,000-4,000 horsepower range.

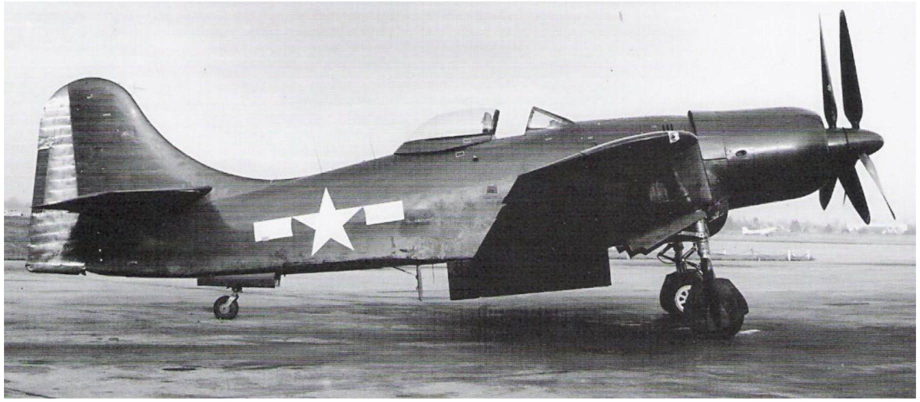


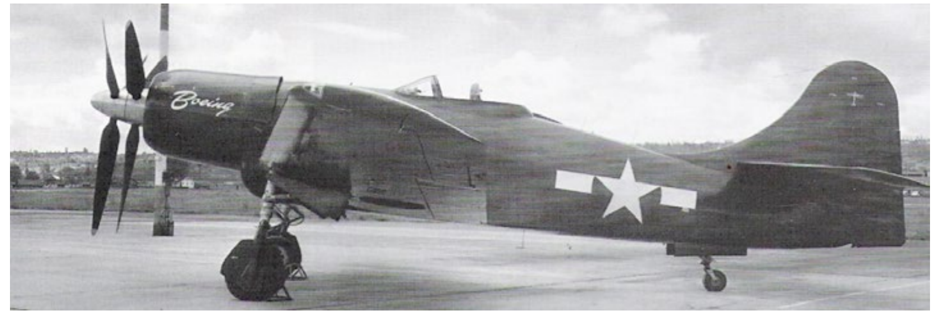






All photos on this page and opposite: <http://aviationarchives.blogspot.com/2017/11/boeing-xf8b-1-photos.html>




Boeing


Boeing


Boeing

Development of jet engines would soon enough offer the needed performance gains for USN fighter and bomber service to negate the need for a new expensive propeller-based airplane. As such, USN interest in the XF8B-1 fell to the wayside as it looked to its future post-World War II needs in jets. The XF8B-1 marked its last serious piston-powered fighter design under review.

Boeing also realized the end of the line for its XF8B-1 proposal and began to reduce work on the product. The original order for three flyable aircraft was eventually completed and these continued in testing with the USAAF and USN into 1946 and 1947 respectively. Boeing's part in the XF8B-1 ended soon after with all prototypes eventually scrapped.

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Text compiled and edited from Global Security, Military Factory, and Wikipedia.

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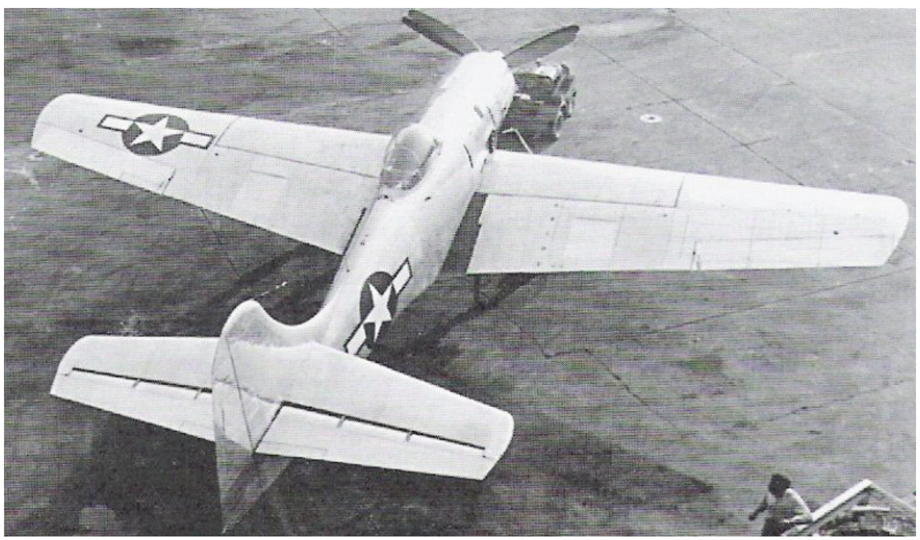

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Resources:

Aviation Archives: http://aviationarchives.blogspot.com/2017/11/boeing-xf8b-1-photos.html

The Boeing Company: http://www.boeing.com/history/products/xf8b-1.page Dave's Warbirds: http://www.daveswarbirds.com/usplanes/aircraft/xf8b-1.htm

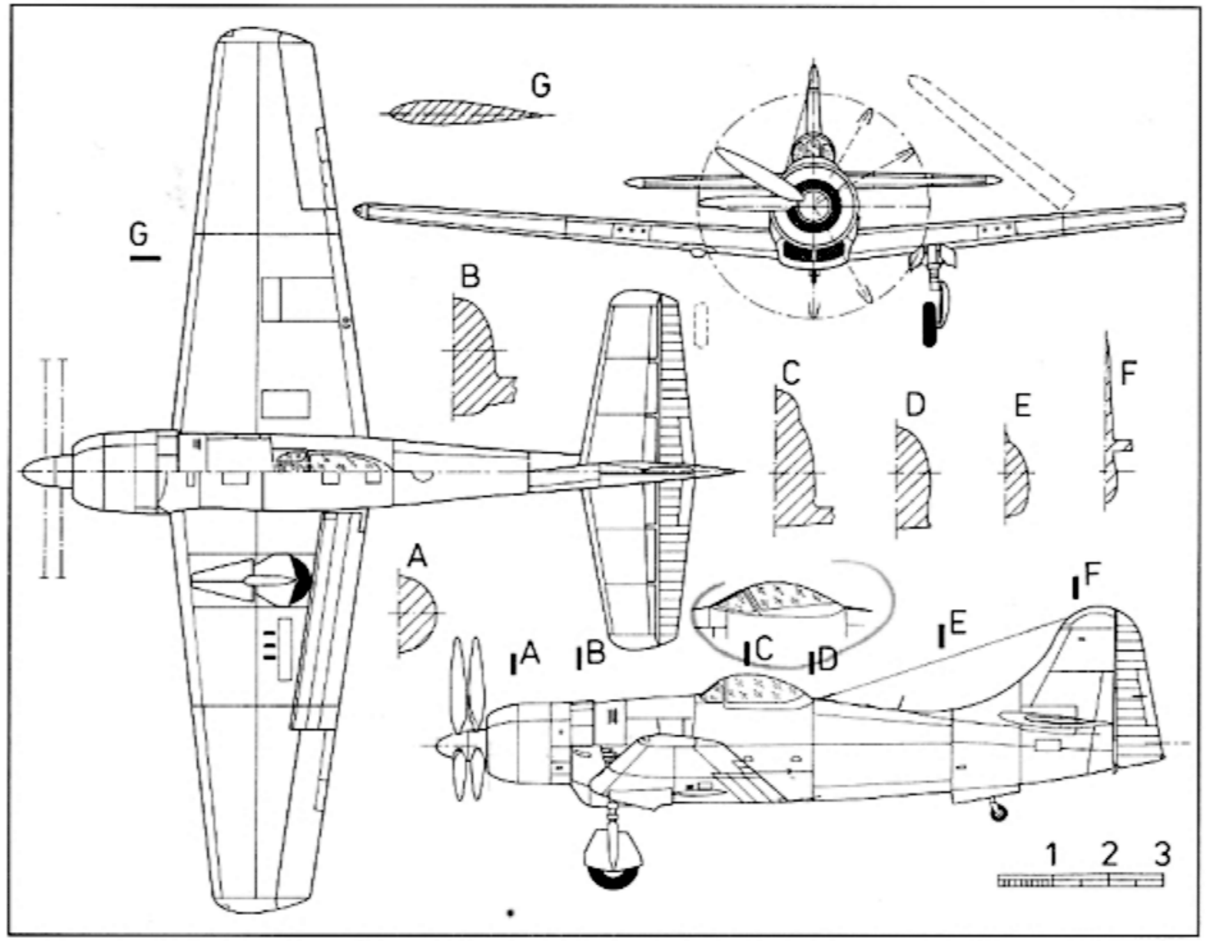
Global Security: https://www.globalsecurity.org/military/systems/aircraft/f8b.htm

History of War: http://www.historyofwar.org/articles/weapons_boeing_XF8B.html

Military Factory: https://www.militaryfactory.com/aircraft/detail.asp?aircraft_id=1220

Wikipedia: https://en.wikipedia.org/wiki/Boeing_XF8B

Zichek, Jared A., *The Boeing XF8B-1 Fighter: Last of the line*, Schiffer Publishing Ltd., 2007. ISBN: 0-7643-2587-6. This 372 page book covers the development and flight testing of the three XF8B-1 prototypes in incredible detail. Highly recommended. Available from various sources for under US$55.



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Boeing XF8B-1 Dimensions

Length:	43' 3" (13.18 m)
Height:	16' 3" (4.95 m)
Wingspan:	54' 0" (16.46 m)
Wing area:	489 sq. ft (45.43 sq. m)
Empty Weight:	14,190 lb (6436 kg)
Max Weight:	1,691 lb (9848 kg) max at takeoff