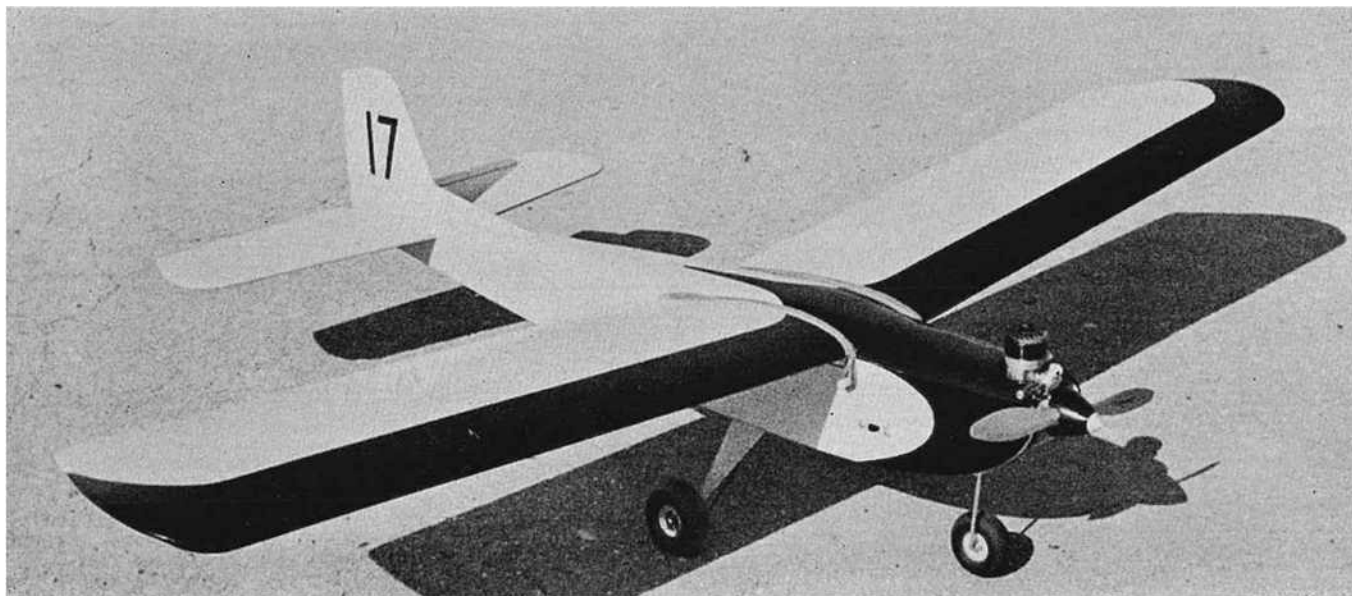


7964 NATIONALS CLASS II WINNER

The MAC SEVENTEEN

By LLOYD SAGER



Clean lines, all sheet construction, and an ability to perform aileron maneuvers characterize this remarkable Class II design.

We decided to name this model "MAC SEVENTEEN" since it is the seventeenth in a series of models designed by D. B. McDonald, otherwise known as Mac. Early in 1958, Mac designed and built No. 1 which was a rudder only job made strictly as a trainer. It performed so well that in the subsequent years 16 others with numerous variations were built in order to experiment with the basic design capabilities. These models included a bi-plane, a low wing multi version, and many of the shoulder wing versions like No. 17, with and without ailerons. One of the remarkable characteristics of this design is its rollability on rudder. Developed to perfection on No. 17, this model has as its claim to fame the ability to execute a rudder roll amazingly close to the best aileron roll.

In the development of the series, a significant new factor was taken into consideration. That's right, make the changes anticipated as desirable as possible for proportional control. The result, in our opinion, is an even better reed flier, and just what was wanted for proportional. The design, as presented here, is the proportional version, with but one slight change recommended for reeds.

It should be noted that this model is primarily a contest performer. It will, however, serve well as an intermediate trainer. The only reason we wouldn't recommend it as a basic trainer is simply because it is quite fast. Yet, it is so stable we get a lot of fun out of flying it with full up elevator, using throttle control to change altitude. The rudder remains very effective and the resulting ratio

of this slow speed flying capability to its full-bore fast pace is greater than any model we have ever seen or flown. Therefore, it can be trimmed to fly slow for training, but since we are past that stage, let's proceed with the contest version.

Mac has developed some construction techniques and design aspects that go hand-in-hand to produce an accurate model. That is, providing, of course, that good workmanship is exercised throughout! Herein lies one of the most important factors in building this or any other model. So, keep this in mind and you won't be disappointed in your version of the MAC SEVENTEEN. Now, since this is not a project for anyone without some model building experience, we will keep the construction details brief.

Wing Construction

Start by placing a 1/16" x 4" sheet balsa trailing edge on the work surface. Add the T.E. stock and position absolutely straight as this is the reference for the alignment of the ribs, and consequently, affects the accuracy of the entire wing. Locate the lower spar, using the ribs as a guide, and block up the spar 3/16 of an inch. Now carefully position and glue the plywood root rib in place. Now it is an easy matter to add the front and rear spacers to locate the next rib. In this manner, complete the installation of spacers and ribs. The space between the last two ribs is left to vary and the tip rib is merely placed as required, which is less than two inches. The top spar goes in place next, followed by the top T.E. sheet which is 1/16" x 4", as are all sheets, except that material necessary to fill the center space. Add the 1/2" x 1" L.E. and let dry overnight.

The top leading edge sheeting goes on next and is held in place by 1/8" sq. balsa strips pinned to the L.E. This eliminates the need for making numerous holes in the sheeting which occurs when pinning directly to the ribs. The remainder of the sheet is held in place by weights so that no pins are used. Fill-in the center section of the top of the wing and let dry thoroughly. Finally, turn the wing over and block it straight before completing the bottom sheeting. Use the sq. balsa and weights so there are no holes made in the bottom sheeting either.

Build the other wing panel in the same manner, then join the two, making sure to obtain the specified

dihedral. Complete the dihedral joint and cover the center section. The wing should be covered and clear dope applied before adding the fuselage fairing. The latter can be made from soft block or 3/32" sheet.

Horizontal and Vertical Stabilizer Construction

Construction is practically identical for these two surfaces. The leading edge is built up as an assembly from a 1/16" x 1/2" strip sandwiched between two 1/4" sq. pieces. Carefully block up the L.E. and locate and block up the T.E., making sure the center of the L.E. and T.E. are the same height above the work surface. Add the ribs and top sheeting and let dry thoroughly before turning over. Again, take care to block carefully, keeping the correct relation between L.E. and T.E., and allowing for the 1/16" sheet added to the first side. Add web stiffeners at the high point between the center ribs on the stabilizer. Add the doublers at the hinge points on both units and then add the 1/16" sheeting. Join the vertical stab to the horizontal stab accurately. The rudder and elevator can be added now, or after painting.

Fuselage Construction

The accuracy of the fuselage is determined by the care taken to build the plywood box, using the plywood bulkheads, sides, floor, etc. Use 0-3/8 flat head woodscrews as desired for strength and ease of assembly. The box assembly includes the landing gear and servo mounting blind nuts and motor mounts, as well as the nose gear

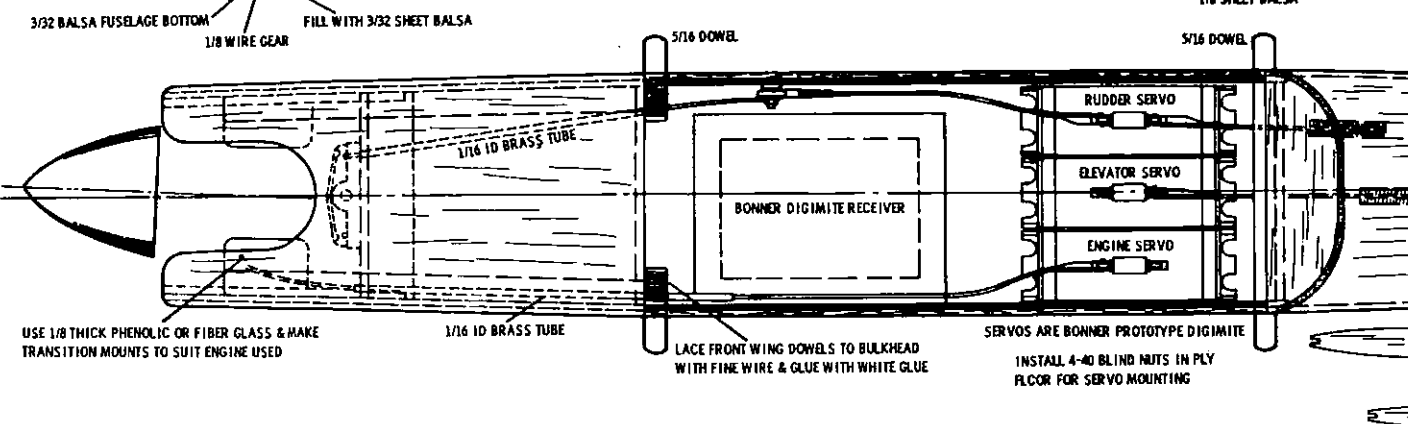
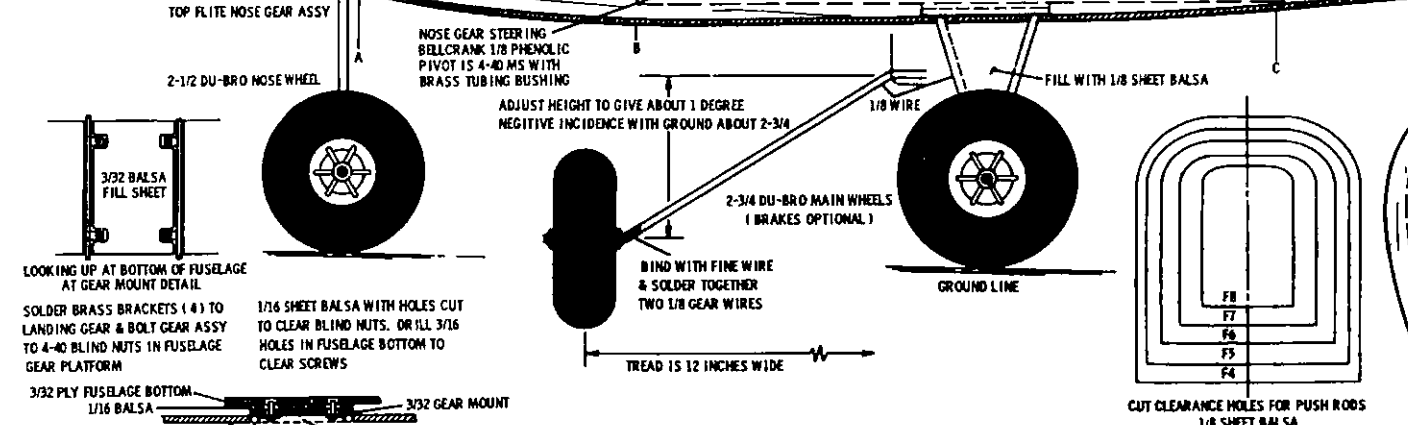
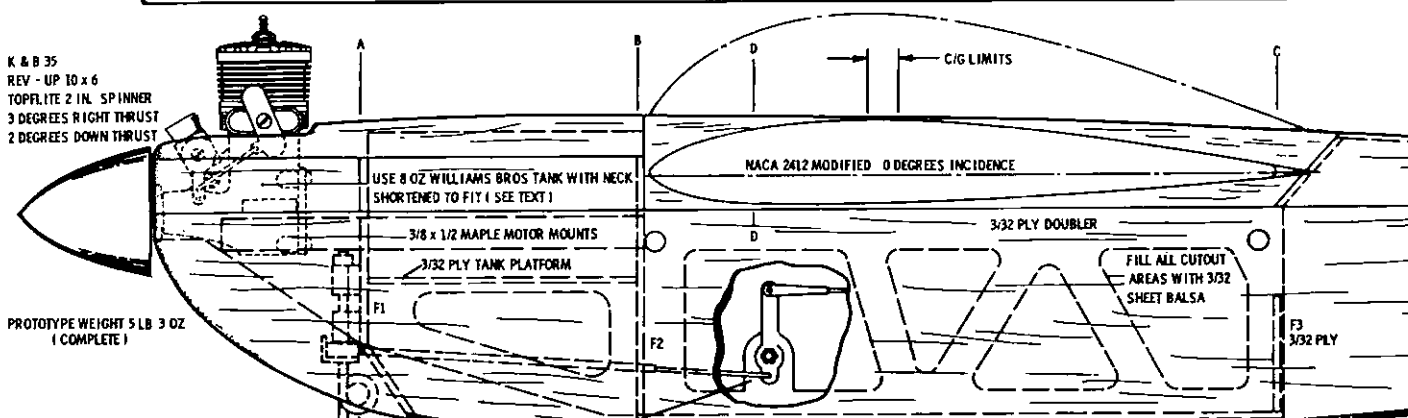
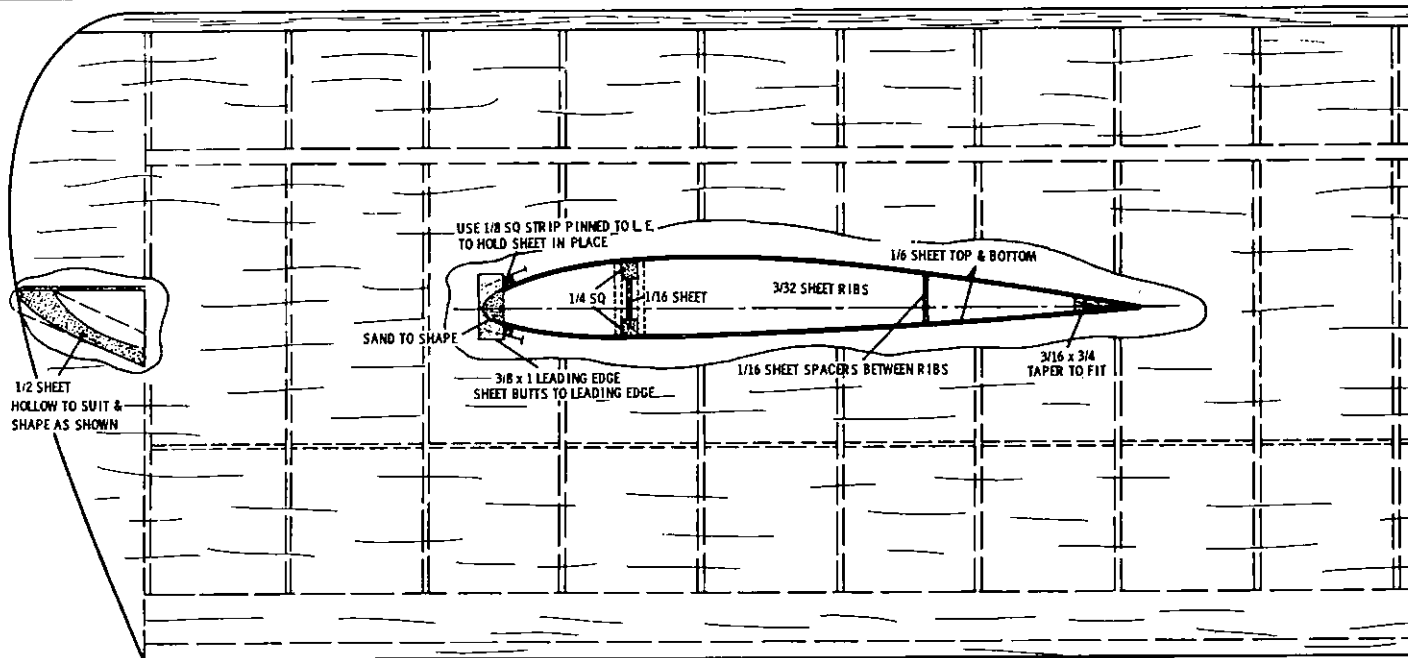


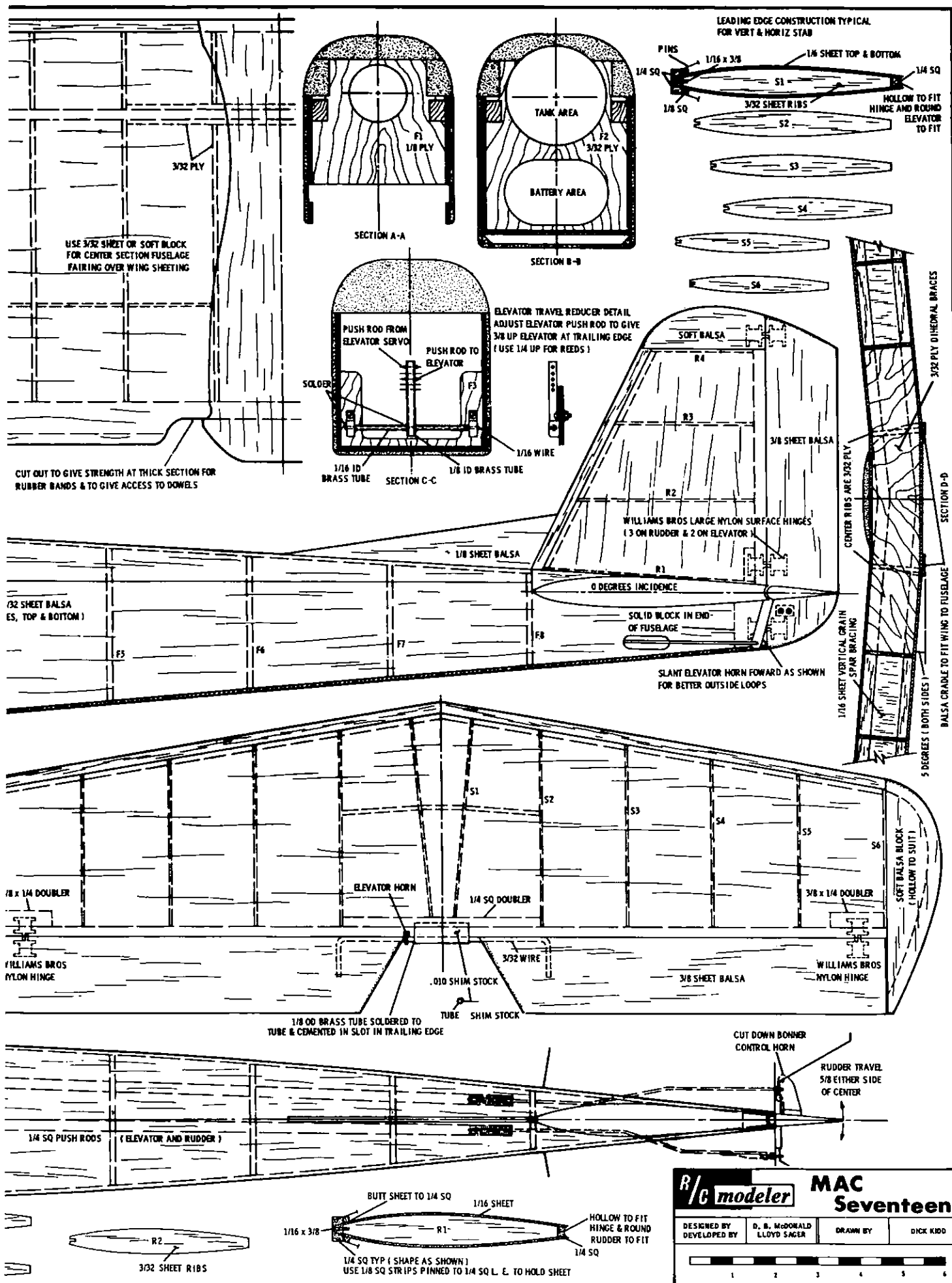
Lloyd and- Mac Seventeen at Dallas after 1964 Nationals Class II victory. Bonner proportional in foreground.

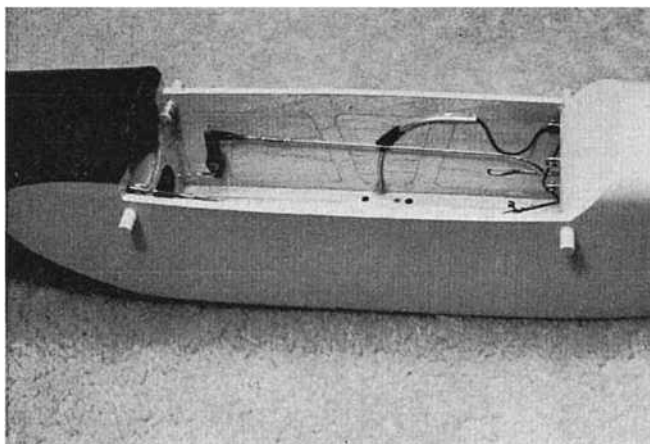
steering bell crank pivot. Make provisions for this hardware before putting the box together. Cut out as much of the plywood as possible without sacrificing strength and then be sure to fill in the cut-out areas with sheet balsa to prevent the side sheets from pulling-in.

Make two side sheets and glue to the box, using the rear dowel holes and top edge of the box for alignment. Accurately align and center the ends of the fuselage sides and glue together with a filler block. Add all the formers and then install the tail assembly. Add the bottom sheeting followed by the top sheeting.

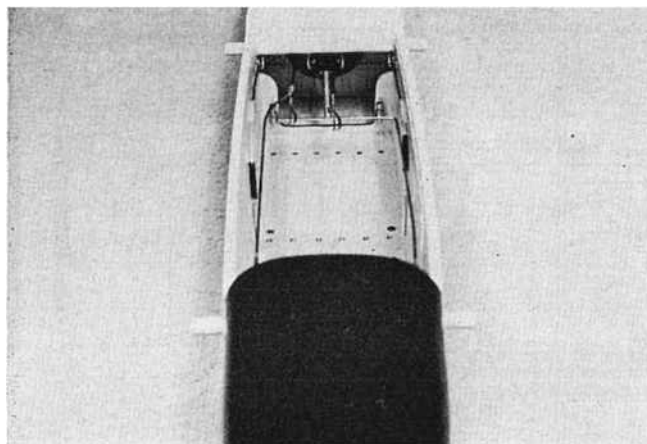




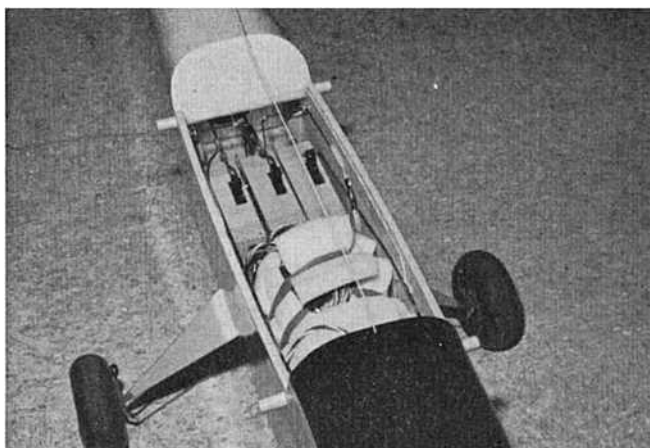




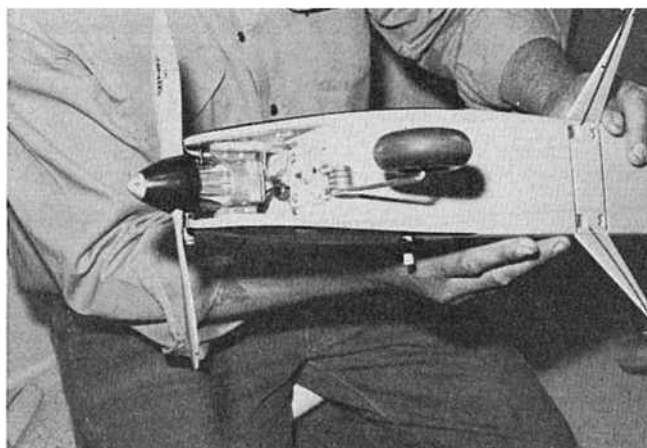
Cabin area of fuselage showing nose gear steering bell crank, dowels "laced" to bulkhead, tubing for brake cables.



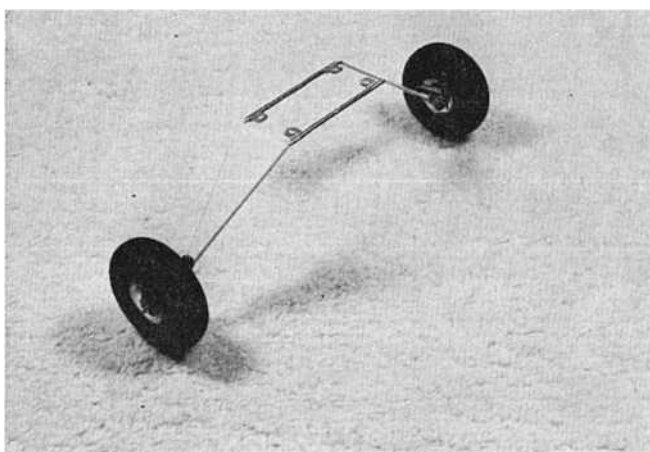
Equipment area in fuselage. Aft bulkhead near top of picture frames the elevator travel adjusting device. The end of the motor control pushrod is coincidentally in line with the device's cross bar.



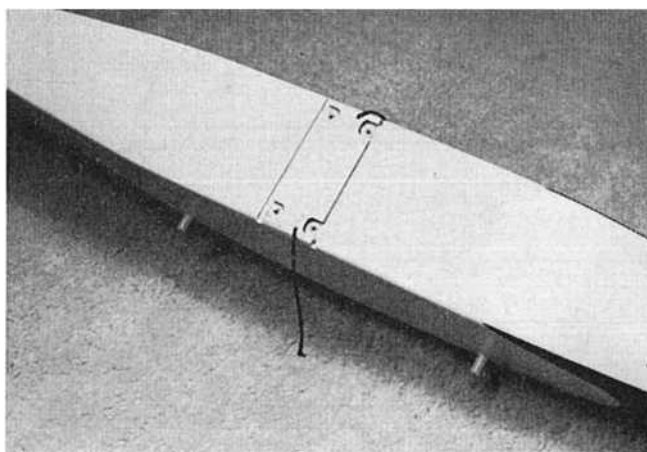
Fuselage view showing equipment installation — receiver (Digimite) is wrapped in foam. Antenna has since been put back inside. This is the wire running near the top along the right side.



Bottom view of forward fuselage. Landing gear and nose wheel installation shown.



Landing gear assembly — Note brackets soldered to wire for mounting. Drag brakes used but not detailed.



Bottom of fuselage with main gear removed. Note cutouts for attaching brackets. Balsa sheet filler used for neat appearance. Black cord is nylon brake line.

The fuel tank is an 8 oz. plastic clunk type but it must be shortened to fit. This is a simple process. Place the bottle neck down about two inches deep in boiling water for a minute or so. This will soften the neck area which may not be collapsed as required. Then hold the bottle, which is compressed to the correct length or shape desired, under cold water. Upon cooling, the bottle will hold its new shape. If not satisfied with the result, just repeat the process until it comes out right. The tank should be packed in the fuselage with foam rubber to prevent it from turning or wearing against the wood due to engine vibration.

The motor mounts are set far enough apart to allow the use of the engine of your choice. A good 35 like the K & B is plenty of power if you keep the weight below 5*4 pounds. (The weight of the original version is 5 lb. 3 oz.) Use thick fiber glass or phenolic sheet to make transition mounts to fasten the engine to the fuselage.

Covering and Finish

One of the advantages of sheet construction is that medium weight silk span is very adequate for covering. Use of silk, nylon, or any other fabric is not recommended. Apply the silk span dry over a well prepared surface and leave it just loose enough so that after it is doped in place it can be dampened and shrunk to fit. Care should be taken not to apply the covering tightly, as it will draw the sheeting, causing a wavy surface over the ribs and formers. Finish with butyrate dope.

Should you have a minor accident resulting in a bruised or broken area in the sheeting, it is easily repaired. Sometimes, if the damage is not severe, the bad area can be cut out, strengthened on the inside, then replaced. To do this, cut out the bad area with a slant cut, making an irregular cutout so it is easy to tell which way to replace the piece. Use only white glue on such repairs as it will not affect the Butyrate surface. After repairing the damage, glue the piece in place and wash off any excess glue. After drying, sand lightly and touch up as required. If the bruise is minor, make a few pin holes in the wood and daub on some white glue thinned with water so it will soak in thoroughly. When dry, the bruised area will regain its original shape due to the swelling of the balsa, and the area will be strengthened.

Flying

The first flight of MAC SEVENTEEN was just like the 100th. That is to say the model did come out accurately, as desired.

Frankly, we must give credit where credit is due and also mention the advantage of having the new Bonner DIGIMITE proportional control system. The takeoff was simply a matter of easing back on the stick until the model broke ground. There was a slight left turn, so it was allowed to come on around while gaining altitude. Once at a comfortable altitude, back pressure on the stick was released and a slight nudge of the rudder trim control set the model on a straight and level course.

The model was then ready for a thorough check-out. We tried the inside loops first. What a wonderful experience flying proportional. Just choose the size loop that looks best and pull back on the stick until it happens! After practicing some turns and getting the feel of the rudder, it was time to try a roll. You will have to see it to believe it! And if you see it, you will say those rolls must have been done with ailerons! After all, that's the aileron stick you are using to fly with.

Yes, that is the aileron stick, and you do fly this model as though it had ailerons. Ok!, before we lose you as a disbeliever, we will admit that the Immelman turn, Rolling Eight and Four-Point Roll suffer a little for lack of ailerons, but that is about all. Any AMA stunt maneuver can be done well with this Class II design.

We were anxious to complete that first flight and get the model back down and have another look at it. The landing was made with a slight cross-wind and there was a little difficulty correcting the drift without ailerons, but that problem has since been solved by experience — and by making a better approach; What we were anxious to learn after landing the model was how much elevator travel it took to get those nice size loops. The stick was pulled back to the loop position and the elevator travel measured. It was a bare inch! At no time throughout the first flight or subsequent flights has it been necessary to use full up-elevator except for a spin. We were able to determine the ideal travel for rudder and elevator for reed flying by carefully noting the stick movement that gave good sized maneuvers. Even more remarkable is the way the model will slow (very slow) roll on rudder **TRIM**. That is, this design will roll on rudder when it is deflected only of an inch. Plenty of down elevator, about half travel, is needed at the right time and the result is a straight line, no-change- in-altitude roll.

Inverted flight seemed almost impossible—until we quit fighting the model and let it fly itself inverted. The problem at first was too much down elevator causing a

climb out over the top. The best way, we learned, was to invert the model, either rolling or looping it, and then put in full down trim. This resulted in a slight inverted climb. Now there was time to experiment with turns. What's this? Left rudder makes it go left and right is right? Seems theory has it that rudder reaction is reversed when an airplane is inverted. If you want it to go right, you should give it left. Well, that's not the case here, and that's fine, so let's not be disturbed. It's easier to fly that way, anyhow!

In the three months following the first flight of MAC SEVENTEEN, one hundred and four more flights have been successfully and enjoy ably completed and logged. We have tried almost every crazy stunt imaginable and found the model extremely groovy and snappy. And by snappy, we mean the model will snap-roll at any attitude, and yet all other flight characteristics are very smooth, giving no indication of the extreme amounts of elevator and rudder travel necessary for snap rolling, thanks to proportional control.

The reed version would be much too sensitive and erratic if rudder and elevator travel were sufficient for snap rolls. So, if you wish to fly your MAC SEVENTEEN on reeds, the snap roll maneuver should be sacrificed for smooth performance on the other maneuvers. By the way, that simple change to make a good reed job out of this design is simply to limit elevator travel to inch up.

However you choose to fly your MAC SEVENTEEN, — proportional, contest, fun or trainer, — we are sure you will enjoy it.

Λίγα λόγια για μένα.

Είμαι Μηχανικός Ηλεκτρονικός και αυτό είναι το αληθινό μου επάγγελμα εργασίας.

Από μικρός δυο πράγματα μου κέντρισαν το ενδιαφέρον και ασχολήθηκα με αυτά.

Πρώτον ο ηλεκτρισμός και δεύτερον το απέραντο γαλάζιο του ουρανού και ο αέρας αυτού.

Το χόμπι του αερομοντελισμού το πρωτογνώρισα τον Οκτώβριο του 1973.

Μου αρέσουν οι ξύλινες κατασκευές αεροπλάνων και σκαφών από το μηδέν.

Ξεκίνησα να συλλέγω σχέδια, άρθρα, βιβλία και ότι άλλο μπορούσε να με βοηθήσει στο χόμπι από τα πολύ παλιά χρόνια.

Έχω δημιουργήσει μια πολύ μεγάλη προσωπική συλλογή από αυτά.

Από το 2004 άρχισα να ασχολούμαι με την ψηφιοποίηση τους, τον καθαρισμό τους αλλά και να τα μοιράζομαι μαζί σας αφού τα δημοσιοποιώ στο διαδίκτυο (όσα από αυτά επιτρέπεται λόγω των πνευματικών δικαιωμάτων τους).

Σήμερα μετά από όλη αυτήν την εμπειρία που έχω αποκτήσει, αποφάσισα να ψηφιοποιήσω, να καθαρίσω και να ξαναδημοσιεύσω σε ψηφιακή έκδοση και ελεύθερα όλα τα τεύχη του περιοδικού RC Modeler από το 1963 μέχρι το 2005.

Σίγουρα είναι μια πολύ μεγάλη, δύσκολη και επίπονη εργασία αλλά πιστεύω με την βοήθεια όλων σας να την τελειώσω σε ένα καλό αλλά μεγάλο χρονικό διάστημα.

Ζητώ συγγνώμη εκ των προτέρων γιατί τα Αγγλικά μου είναι φτωχά.

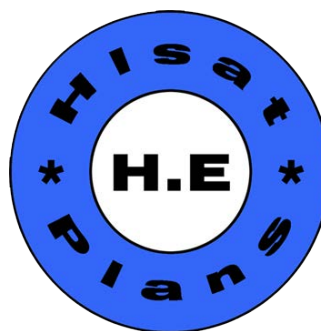
Δεν είναι η μητρική μου γλώσσα γιατί είμαι Έλληνας.

Εύχομαι σε όλους εσάς που θα επιλέξετε να τα συλλέξετε και να τα διαβάσετε αυτήν την εργασία μου καλή απόλαυση και καλές κατασκευές.

Το όνομα μου είναι Ηλίας Ευθυμιόπουλος.(Η.Ε)

Το ψευδώνυμο μου Hlsat.

Η χώρα μου η Ελλάδα και η πολη μου η Ξάνθη.



A few words about me.

I am Electronic Engineer and this is my true work job.

From small two things attracted my interest and I dealt with them.

First electricity and secondly the blue sky and the air him.

The model aircraft hobby met him in October 1973.

I love the wooden structures from scratch airplanes and boats.

I started collecting plans, articles, books and anything else that could help the hobby of many years ago.

I have created a very large personal collection of them.

Since 2004 I became involved with the digitization, clean them and to share with you since the public on the internet (as many of them are allowed reason of copyright).

Now after all this experience I have decided to digitize, to clean and to re publish in digital edition and free of all issues RC Modeler magazine from 1963 to 2005.

Certainly it is a very long, difficult and tedious task but I believe with the help of all of you to finish in a good but long time.

I apologize in advance because my English is poor.

It is not my mother language because I am Greek.

I wish all of you who choose to collect and read this my work good enjoyment and good construction.

My name is Elijah Efthimiopoulos. (H.E)

My nickname Hlsat.

My country is Greece, and the my city is Xanthi.

