World Champ

■Zdenek and Milos Malina

OUR SUCCESSFUL participation in the World Championship F3D FAI Pylon Races last August in Chicopee, MA was a long journey with a happy ending for us. But we hope that this is not the end of our aeromodeling days. We want to continue racing and hope we can visit the U.S.A. again.

We spent 20 unforgettable days with our American friends, and we would like to take this opportunity to thank all who made our stay in the U.S. possible and so enjoyable. Everywhere the people were so friendly; it was as if we had known them all our lives. It was simply fantastic, and we have many happy memories to cherish. Saying goodbye when it was all over was hard to do and very moving.

Model Aviation magazine offered us this chance to write about ourselves, our modeling background, our preparations —anything to do with Pylon Racing. It is not very easy to write about oneself. If you've ever tried it, you'll understand; but here is our story.

Our interest in modeling goes back to when Zdenek was 15. We had both always been interested in engines and technical matters, and we chose F1C Free Flight Power as our

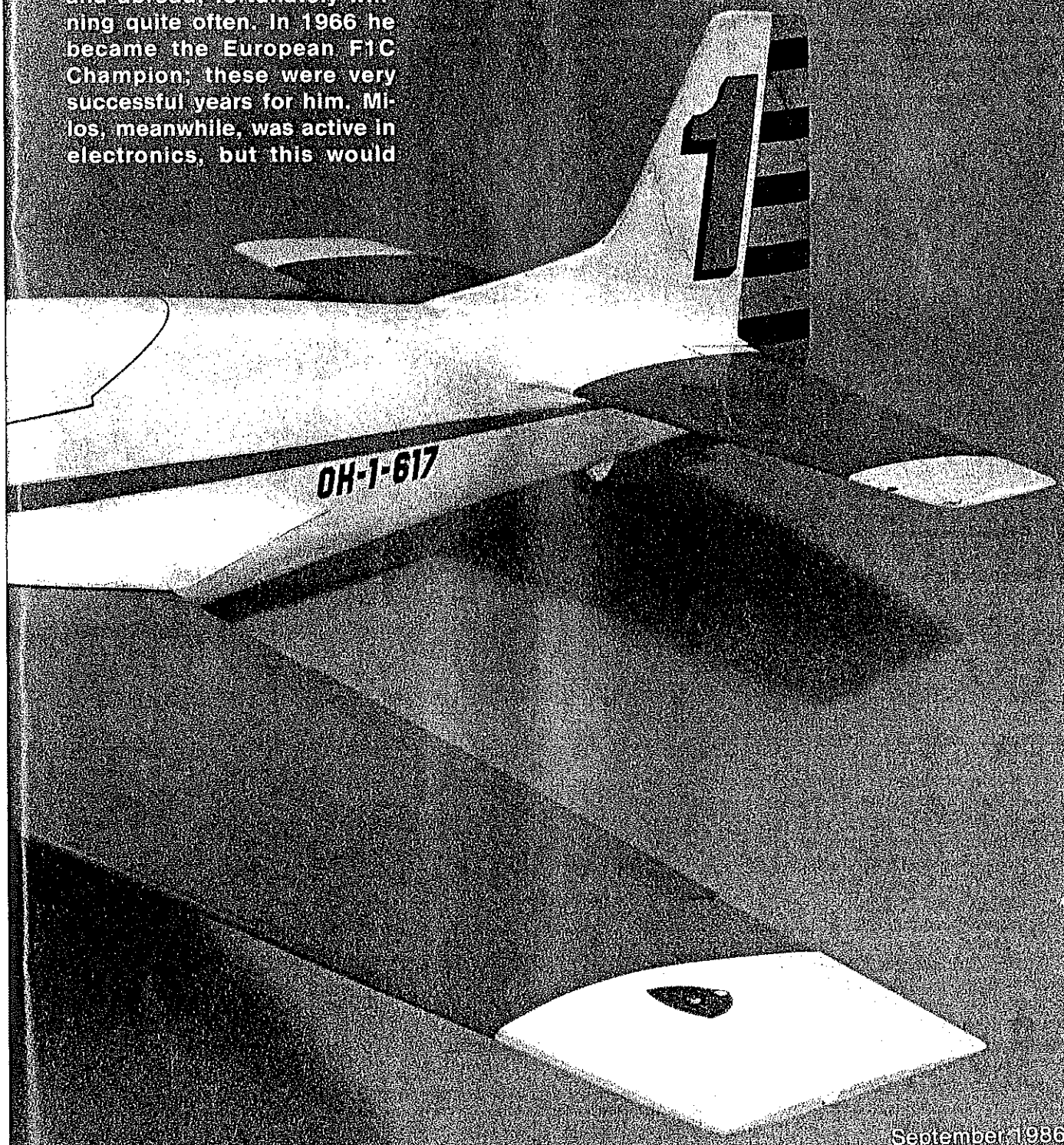
Zdenek and Milos Malina's victorious Mustang Miss RJ. Last year, the veteran competitors won both the World Champs and U.S. Nationals.

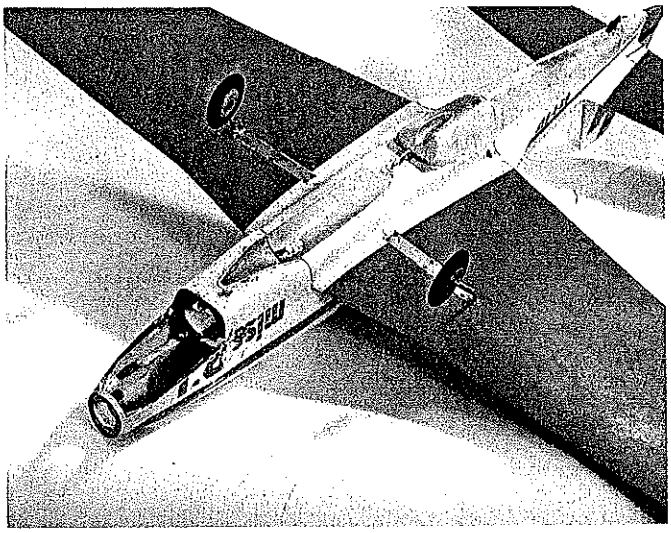
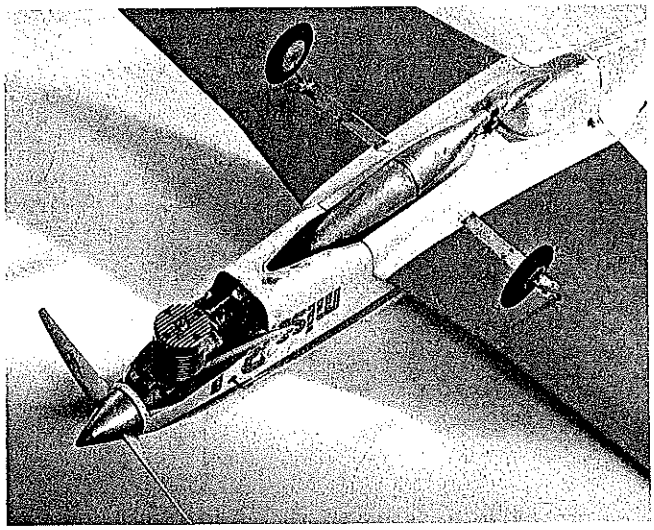
We are privileged to present the model which won the first RC Pylon Racing FAI World Championships in 1985—designed, built, and flown by two Czechoslovakian brothers.

pion MissRJ

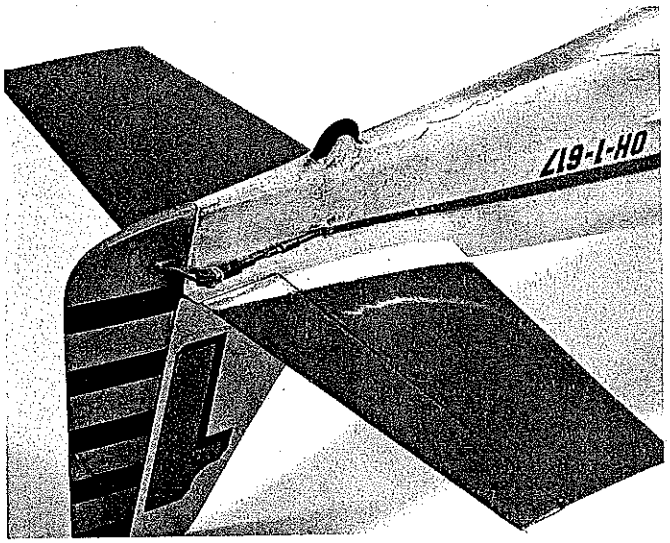
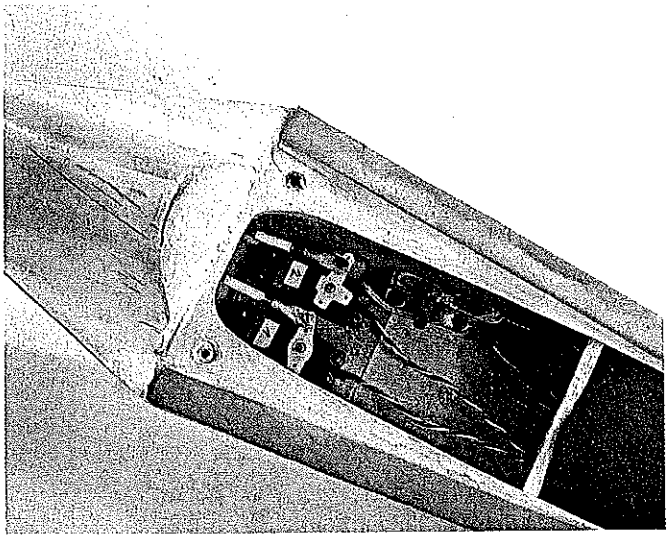
entry into modeling. Milos soon lost interest in the event, though, and this left Zdenek on his own. He began taking part in many contests and traveled a great deal both home and abroad, fortunately winning quite often. In 1966 he became the European F1C Champion; these were very successful years for him. Milos, meanwhile, was active in electronics, but this would eventually bring him back to aeromodeling.

In 1974 Milos was lucky enough to get a Graupner RC set, and that was it. Initially he decided to fly in the F3A RC Pattern category. But after several contests, he decided that this, too, was not the event for him. The question arose: What should we do next?



Left: Front view shows the bottom part of the Miss RJ with engine and tuned pipe removed. Landing gear is attached to the wing with the help of two duralumin sheets. Right: MVVS 6.5 GRRT engine fitted with tuned pipe which is attached to the fuselage with one steel sleeve only and slides freely on the exhaust outlet adapter. The 200 x 150mm fiberglass prop hub is covered with a 40mm duralumin spinner.

Left: Detail view shows rudder control wire coming through an exit guide. Tail wheel is made of hard rubber. Right: Two Futaba servos inside the Miss RJ fuselage control the elevator and rudder. The extreme left end of the rudder servo travel trips the engine shutoff mechanism.

I can't remember whose idea it was to try Pylon Racing. All we knew about it was that it existed in the U.S. and had been popular there for a number of years. After some research we discovered that Pylon Races were being run in Europe as well, particularly in Sweden, West Germany, Great Britain, and even Hungary.

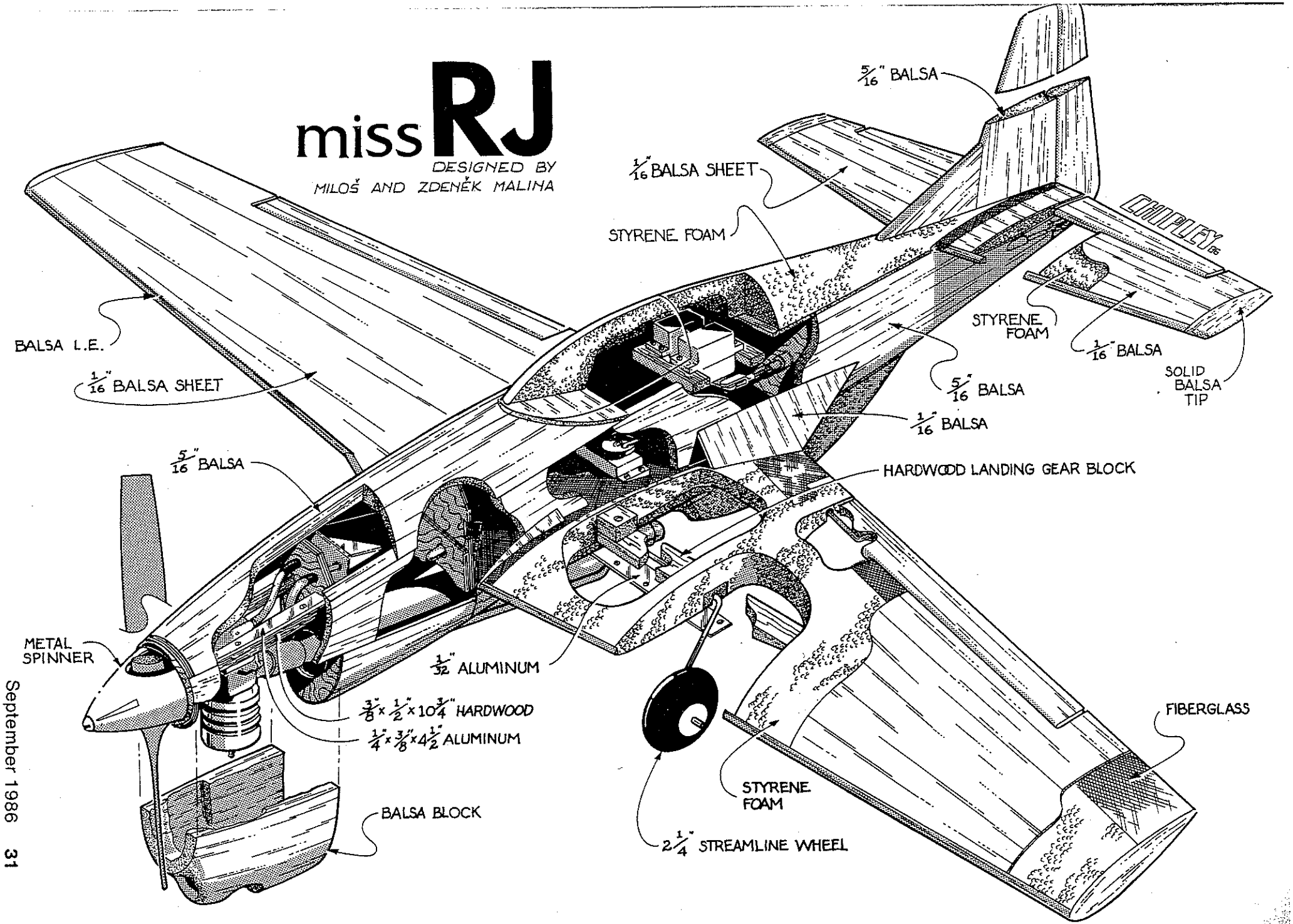
We obtained plans of the then very successful American model Bob Cat from Bob Violet. We installed the Czechoslovakian MVVS 6.5/F engine, intended mainly for use in F3A Pattern. At that time it was one of the best engines of its category, but we were not satisfied with our racing times of about 2:30, as times of under two minutes were common elsewhere in Europe. Undaunted, we continued to practice. By the end of 1975, we flew our best time—2:15. We felt this was due mostly to improved piloting skills, but it still was not good enough.

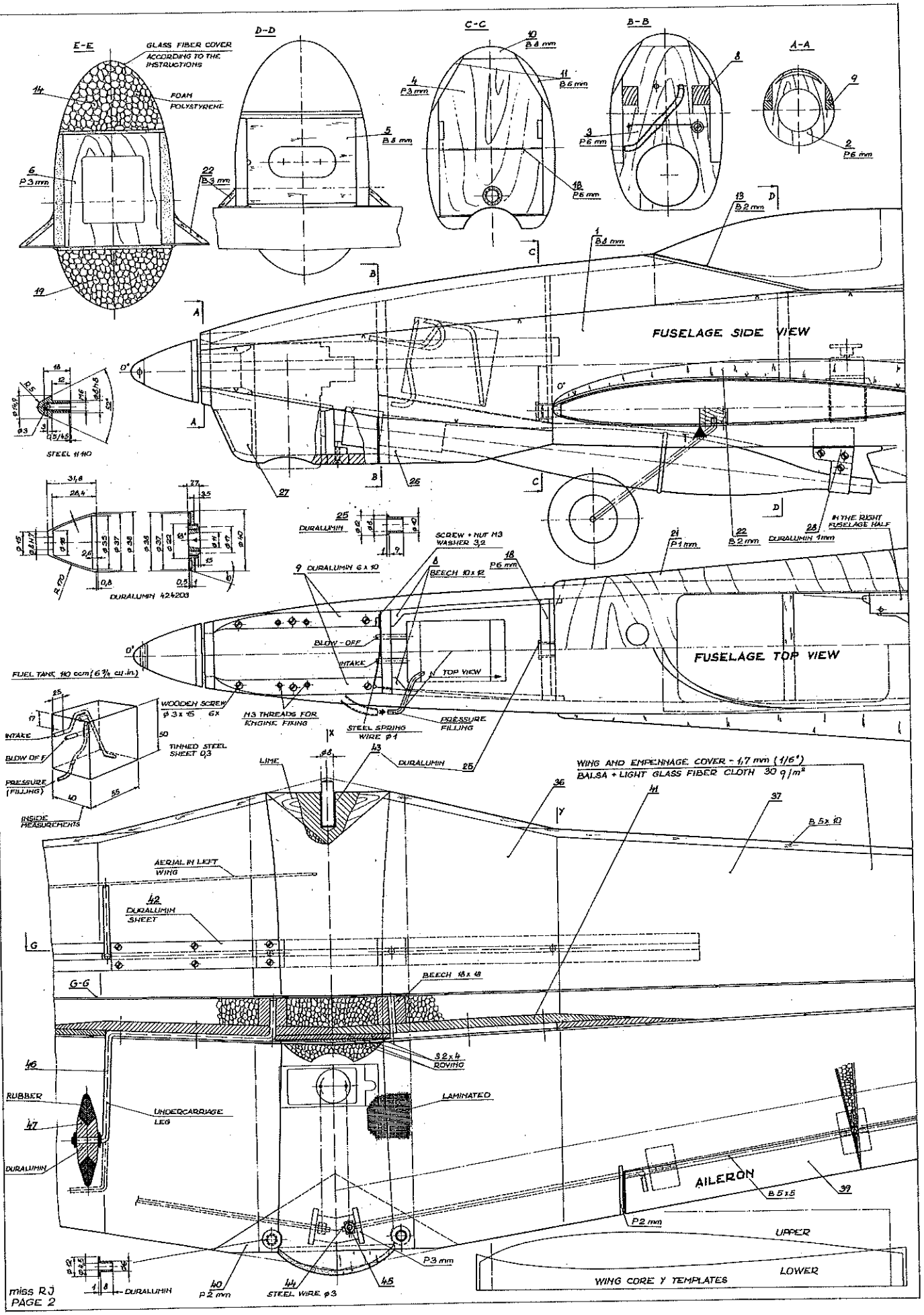
A lengthy period of research, technical information exchanges with our fellow Czechoslovakian Pylon Racers, and still more practice followed. Several years passed, and as our combined knowledge and skills increased, our racing times also improved. In the early 1980s, it was becoming apparent that the Czechoslovakian FAI Pylon Racing teams were a group to be

Two air intake openings are visible in this view. The one above the duralumin spinner provides air for the carburetor. Another, in the front part of the cowl, is for cooling the cylinder.

miss RJ

DESIGNED BY
MILOŠ AND ZDENĚK MALINA





miss RJ
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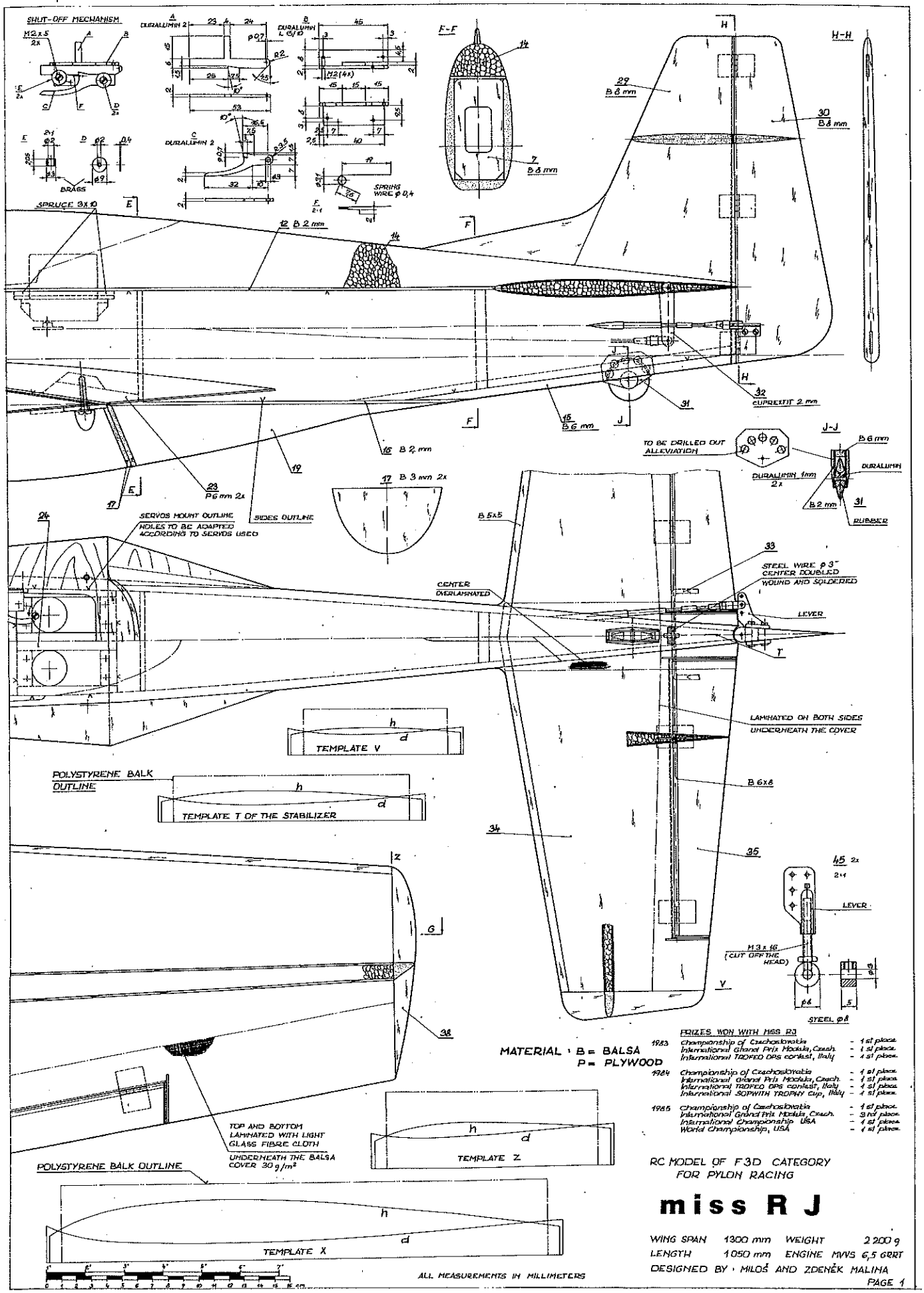

MATERIAL : B = BALSA
P = PLYWOOD

PRIZES WON WITH MISS RJ

1983	Championship of Czechoslovakia	- 1 st place.
	International Grand Prix Hradec, Czech.	- 1 st place.
	International TROFEO DPS contest, Italy	- 1 st place.
1984	Championship of Czechoslovakia	- 1 st place.
	International Grand Prix Hradec, Czech.	- 1 st place.
	International TROFEO DPS contest, Italy	- 1 st place.
	International SOPWITH TROPHY Cup, Italy	- 1 st place.
1985	Championship of Czechoslovakia	- 1 st place.
	International Grand Prix Hradec, Czech.	- 3 rd place.
	International Championship USA	- 1 st place.
	World Championship, USA	- 1 st place.

RC MODEL OF F3D CATEGORY FOR PYLON RACING

miss R J

WING SPAN	1300 mm	WEIGHT	2 200 g
LENGTH	1050 mm	ENGINE	MVVS 6,5 GRRT

DESIGNED BY : MILOŠ AND ZDENĚK MALINA

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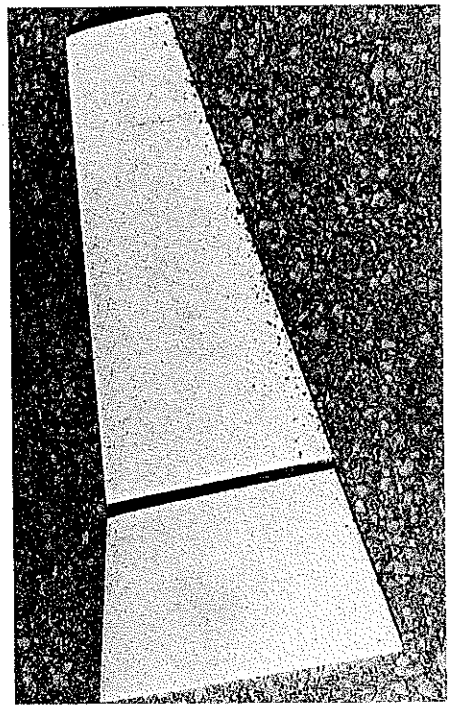
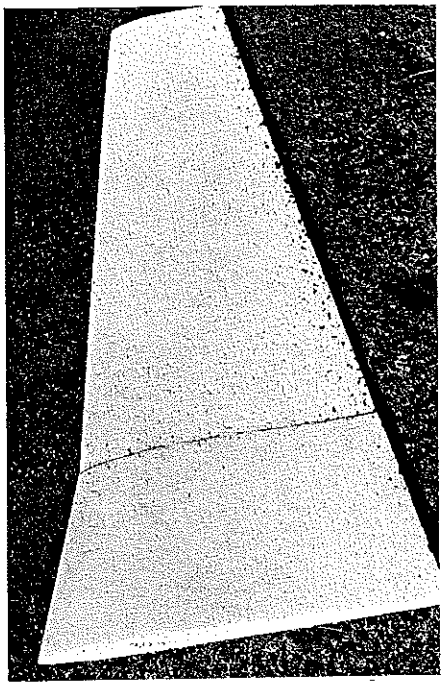
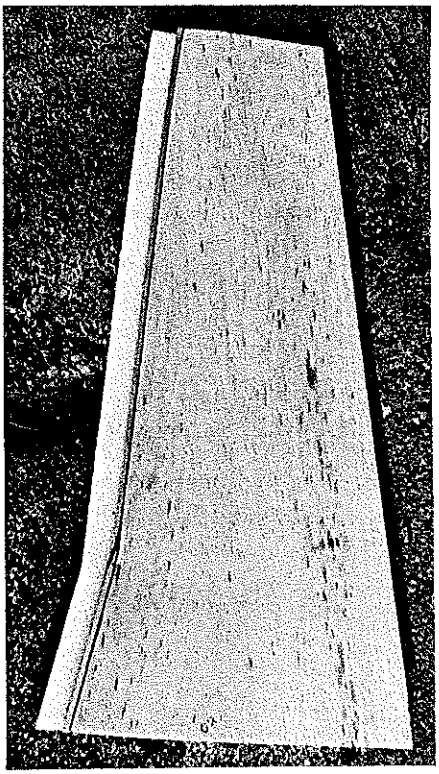


Wing half is made up of two pieces of polystyrene cut from templates. Butt-join the two pieces before covering with sheet balsa.



Butt-joined wing parts are covered with balsa. Smooth the joint lightly with sandpaper.



Wing is covered with 1.7mm (1/16-in.) balsa. Glue the one-piece balsa cover to the foam core with an epoxy glue diluted 1-to-1 with methyl alcohol, then use fine sandpaper.

taken seriously. In 1983 all of our efforts were rewarded when we won the prestigious Trofeo OPS race in Italy with a fast time of 1:25. Two weeks later, at the Grand Prix Modela race, we were fortunate to win again, this time over 80 of the best Pylon Racing teams in Europe.

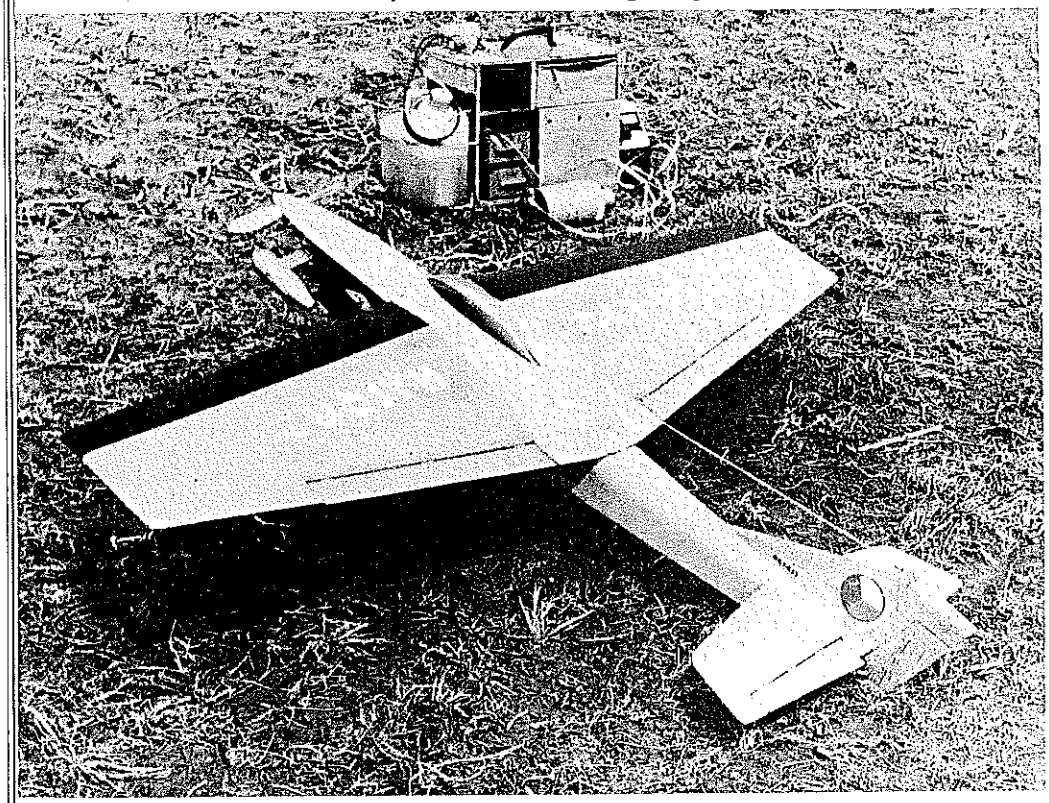
At the end of 1984, we learned that the first World Championship for F3D would take place in the cradle of Pylon Racing, the U.S.A. We immediately awoke from the lethargy that had slowly creeped over us in the past months. At last, here was a chance to encounter the best fliers of the world. Secretly, we hoped that the whole Czechoslovakian national team would go to the U.S., but in time, our hopes melted away. By mere coincidence, it was only the Malinas who would attend the World Champs. We were supposed to represent the whole lot of the Czech fliers who had to stay at home.

How was it in the U.S.A. for us? The high temperatures and humidity at the New York airport were not as discomfitting as the fact that the box containing our models was lost enroute. I can still remember how we stood helplessly in the airport terminal trying to locate our lost model box. We had no success and finally left the airport without our models after three hours of fruitless waiting. We spent the next three days in New York in a desperate mood before the model box was finally found. You can trust us when we say that the waiting was a very unpleasant time for us.

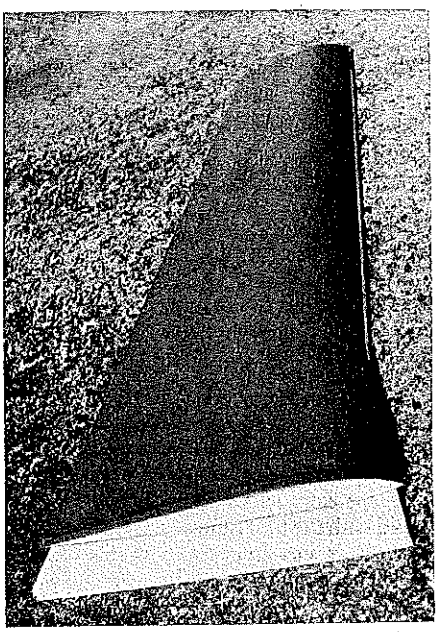
Another unpleasant discovery was that we would not be able to use our old Futaba RC set in the contest due to its 27 MHz frequency. Fortunately, our guardian angel, Bob Wallace, loaned us his son's RC set which was on a 72 MHz frequency. This set, unfortunately, had different control travel limits.

Our practicing was not very successful. Milos was nervous and unsatisfied. He was not used to this RC set and complained that the model's response to control inputs was not satisfying. The radius of his turns had increased, and despite all our adjustments on the model and transmitter, the situation did not improve much. But we had no other choice and, therefore, expected our performance in the first World Champs would be less than we hoped for.

We used our best engine equipped with our best tuned exhaust pipe and also our well-proven prop. Still, the test flights were very poor and much worse than our usual clockings at home. It was a disappointment not only for us but also for all the others, mainly for Bob Wallace and his friend, Don McStay, who watched our practicing at the Rocky Hill flying field in Connecticut.



The plane that started it all. Bob Cat, a replica of the Telford/Violet winner, was Malina's (and Czechoslovakia's) first Pylon model. Today's rules require more scalelike planes than then.



Cover wing surface with a light fiberglass cloth. Adding color to the laminating resin will cut down on paint (and weight) later on.

Each day we spent a lot of time trying to figure out what was wrong, but we could not identify anything to lay the blame on.

All's well that ends well. Toward the end of the contest, Milos calmed himself and started to fly as we were used to doing at home. At last Zdenek succeeded in tuning the engine correctly, and it was decisive. We won the FAI World Championships, and we were two of the happiest Pylon Racers on earth.

We had tried to make the best of the week before the contest. Our program was clear: we would closely watch the best Americans flying in the AMA Nationals Formula 1 event in the mornings and then spend the afternoons practicing at the modeling airport in Rocky Hill. To be on the safe side, we practiced with both of our models. Our spare Shark model was a little slower, but unbelievably reliable. We put it aside with the good feeling that we had a competitive backup should the Miss RJ fail.

Things never seemed to go entirely smooth for us, though. At the end of the week just before the start of the competition, a crack developed in our best tuned pipe. We attempted to repair the pipe, but it ruptured again after only two flights. From then on, things began to get even worse. In the span of an afternoon, we lost almost all our spare tuned pipes. We had never encountered such a problem before, and we had no idea what to do. We weren't even sure of the cause of the problem. We soon discovered that our best engine had developed excessive vibration, and any pipe we fitted to it ruptured after only a few flights.

Bob Wallace was never too far away and he saw our troubles. We understood the look on his face when he came to tell us that for the World Champs, each competitor would have to fly 14 rounds. What could we do? Never before had we flown more than seven flights in one contest. But these

On the starting line at the 1985 European Championships. Zdenek holds Miss RJ while Milos prepares to start the engine. Malinas have many European victories to their credit.

were the rules, and we could only accept them. This important information determined our future tactics: the team that would become the World Champions would have to fly well throughout all the rounds, and their mental determination would have to remain unshakable throughout this marathon race. Consistency was our major goal.

Therefore, we fitted our model with a spare engine which, while not as high-revving as our original, was very reliable. It had a very tight piston/cylinder fit, and this would give it a better chance of lasting through 14 rounds. We flew a couple more test flights and had no more cracked pipes. The engine started reliably and ran consistently. The only thing left was to fine-tune the length of the pipe and choose the right compression ratio. These depend so much on the atmosphere, though, that they would have to be left until just before the start of the contest.

The contest officially opened on August 4, and the entire first day was devoted to official practice. We did not use that chance, although later we would need it. We were used to working, adjusting, and checking during practice, and the conditions for doing such things at the race site didn't seem good for us. We did not think it was wise just to fly around and risk the possible destruction of the model. We also did not want to torture the engine with such a grueling racing schedule still to come.

Most of the other participants and race officials could not understand our behavior, and as we learned later, they did not take our explanation seriously. We used the practicing day in our own way, though, and spent the time watching the other fliers. The Australians seemed to be the best; they were a very tight, spirited team. The British, as well as the Americans, were flying very fast. The best American—superstar of American Formula 1 racing, David Shadel—dispelled any doubts as to his FAI Pylon know-how.

We were disappointed with the Canadians and especially the Italians, whom we knew well from the European contests. Where was their form, and why did they arrive so late? They were nervous and did

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not talk much. We flew a couple of not very satisfying practice flights at the end of the practice day, and we decided to leave all till tomorrow.

We arrived at the contest site early the next morning with Bob Wallace and began to fine-tune the Miss RJ. We attempted to find the right compression ratio and tuned pipe length, but we could not seem to hit upon the correct combination. The engine was definitely not turning its highest revs. It was about then that we began to question our decision to sit out the practice day. Finally, we tried reducing the prop diameter, but much time had gone by, and the first of the race officials and contestants began to appear. The CD soon prohibited additional practicing for safety reasons.

There was nothing else for us to do but wait it out. We felt our engine was running well and was reliable, but we also felt it was capable of turning higher rpm. We decided to hold out the last possible adjustment (shortening the tuned pipe to the minimum) until after the first round.

Finally luck started to run our way, and we landed at the end of the heat matrix for the first round. This gave us the chance to watch our competitors fly and to know what kind of times we had to beat. The times were not as fast as they had been during practice, and this helped to calm us, but we were still very nervous on our first takeoff. What would our time be?

You can't know how happy we were after the speakers announced we had taken the lead with the best time of 1:24.6 for the first round. It was great to know this when we had not been flying at full speed and we still had some engine tuning in reserve. For the next round we shortened the pipe by about 4mm and cut our time to 1:22.9. Without any further hesitation, we then shortened the pipe to its minimum.

At last the engine was running at full revs. Our time in the following rounds—around 1:20—confirmed that we were right. Soon a gap began to develop between us and the other competitors and we became quiet. Then it happened! In the seventh round Zdenek was not careful enough, and the tail struck his foot during release. Our model did not take off, and we received a zero score. Our blood froze. We knew that from then on, we could not make any more mistakes. As a result, we began to fly conservatively. Luckily, we could afford this as we had a lead of 14 seconds over our closest competitor.

We knew we only needed to finish all remaining rounds with average times. Our last flight was also the last heat of the entire World Championships. Therefore, it was uncertain until the last moment who would be the World Champions. Even though it would only take a time of 1:37 for us to win, no one could imagine how nervous we both were before this last takeoff. We did not exchange a single word. We realized how little stood between us and the title, and yet

the tiniest mistake or malfunction would mean our defeat.

The engine started perfectly. I held the model for a second after the starter dropped the flag just to avoid the risk of a takeoff collision. The flight went smoothly, and thus we became the first World Champions of FAI F3D Pylon Racing.

The stress was over. For the first time in two days, we were able to relax and smile. We were thrilled, and our fellow competitors joined us in celebrating our victory. We shall never forget these moments so full of genuine friendship. The Americans had organized a World Championship on a top level. The highly professional and perfect organizing staff was led by an uncompromising Contest Director, Wayne Yeager. The entire organization was excellent.

At last both of us had a chance to personally meet such notables as Bill Wisniewski, John Worth, John Grigg, Jim Shinohara, Dave Shadel, Cliff Telford, and many others. From the 20 beautiful days we spent in the U.S., we brought home the best thing of all, memories.

Building Instructions. Our Miss RJ is a replica of an actual P-51D Mustang (as required by FAI F3D regulations) which races on a similar full-size closed course. This aircraft was chosen mainly for its suitable portions and shape which we believe are close to ideal for F3D. The construction was based on our previous well-tried Lotus and Pink Panther models—most of the construction details have been carried over with no changes.

The model has very forgiving flying characteristics. In spite of this, it is not suitable for beginners or those with little RC experience. Needless to say, the model must be built with a fair amount of care and exactness. Bear in mind that this model can reach speeds of over 150 mph in horizontal flight and is subject to considerable stress in the turns. Therefore, we do not recommend any construction changes, especially relative to strength, as the model may suffer a structural failure in the turns. Nevertheless, in comparison with our rivals, our model can be considered to be a very simple one.

Wing. The core should be cut from polystyrene foam, the specific weight of which should not exceed 15 kg/m³ (1 lb./ft.³). The wing is composed of four basic parts. First, cut off both central parts #36 (left and right) using the X and Y templates. The trailing edge should be twisted negatively as per the Z template (for about 5mm, 3/16 of washout).

The pre-cut outer parts #37 will be butt-jointed to the central parts #36 using epoxy. Use 1.7 mm (1/16-in.) balsa for covering the wing. Each balsa part for covering should be glued together in advance so that you have one-piece sheets that are slightly larger than the half wing

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outline. Gently sand both the polystyrene foam core and balsa cover before you glue them together.

To laminate the foam with the balsa, first apply epoxy which has been thinned with methyl alcohol to the balsa. Use light glass cloth to laminate the trailing edge as shown on the plans. Wait for about 30 min. to allow the alcohol to evaporate, then place the balsa-covered wing core into a plastic bag. Expel the air so that the balsa sheeting will adhere perfectly to the foam core. The pressure applied to the balsa should be strong enough so that any unevenesses of the polystyrene core will appear on the balsa surface. After about 8 to 10 min., remove the wing panel from the plastic bag.

Sand the wing surface and the trailing edge to shape. Glue the leading edge, end arch #38, and the hardwood block #41 for the landing gear in place using epoxy.

Once the epoxy has cured, the wing panels should be sanded and then covered with light fiberglass cloth similar to the way the sheeting was glued to the foam core. In order to get a smooth surface, it is best to use about ½ oz. of epoxy per wing panel. Use lower pressure this time, though, so that the wing does not become deformed. The vacuumizing should take about 10 hours, at which time the wing should be removed and then allowed to cure at least another 24 hours.

After the epoxy has thoroughly cured, cut the ailerons #39 out of the wing and glue a piece of 5 x 5mm (3/16 sq.) to the leading edge of the aileron. Shape this part as shown on the plans, and cover it with light fiberglass cloth. Contour wing aileron wells to accept the ailerons. A perfect fit will be obtained if the aileron front is pressed into the wing and kept there until the epoxy has completely cured.

The aileron #39 should be attached with three hinges. The aileron pushrod #44 is made of 3mm (⅛-in,) music wire and is placed in two plywood mounts, P2 (2mm, 3/32) and P3 (3mm, ⅛-in.). When fitted, the aileron must move freely but with no sloppiness.

Sand the contacting surfaces of both wing halves so that they will butt against each other along the whole center profile while maintaining the correct dihedral. Epoxy the wing panels together. When dry, stiffen the trailing edge at the wing center with 2mm (3/32-in.) plywood #40 with holes for fastening the wing screws. Insert and glue in place a wedge of hard balsa with a duralumin tube #43 into the leading edge at the wing center, and cover it with one coat of light fiberglass cloth. When the epoxy has cured, cut out the opening for the servo in the wing, and glue a 2mm (3/32-in.) plywood plate for mounting the servo.

Tail surfaces. Using the T and V templates, cut the core #34 from polystyrene foam. Butt-join both core halves, and cover them with 1.7mm (1/16-in.) balsa in the same way

as the wing. Glue the trailing edge and tips in place; sand the whole assembly, and cover it with light fiberglass cloth.

The elevator #35 is attached with four hinges and is controlled by a 2mm (3/32-in.) brass lever #32 soldered in place with a copper sheet. The two halves of the the elevator are joined with 3mm (⅛-in.) steel music wire #33 which is glued into them.

The fin and rudder (#29 and 30) are made from 8mm (5/16-in.) balsa and should be glued together now. After shaping and profiling as shown on the plans, cover with light fiberglass cloth. The rudder #30 is attached with three hinges and the pushrod is attached to its left side.

Fuselage. It is best to prepare some of the parts before beginning actual construction. Cut out all formers #2, 3, 4, 5, 6, and 7. Cut out the fuselage sides #1 from 8mm (5/16-in.) light balsa, and cover them on the inside with medium fiberglass cloth.

Bolt together the engine mounting blocks #8 from pieces of 10 x 12 x 235mm (⅜ x ½ x 10¾-in.) hardwood. Mount the duralumin strips #9 of 6 x 10 x 115mm (¼ x ⅜ x 4½-in.) size. Insert fiberglass cloth between contact areas before you screw them together and apply epoxy.

The fuel tank of 110cm³ (6¾ cu. in.) maximum capacity should be constructed of brass or tin-plated steel sheet soldered together. Check for leaks using a syringe. When bending the sheet, make sure that all bends are round—sharp bends will crack in flight.

The shutoff mechanism should be made exactly as shown on the plans. The main body is of aluminum angle 10 x 15mm (⅜ x ⅝ in.). The mounting plate for both servos is made of 2mm (3/32-in.) cuprextit (glass laminate). The elevator and rudder pushrods are from a Graupner rope guide stiffened with 1.5 mm (1/16-in.) steel wire. On the pushrod ends there are clevises for ball links.

Glue formers #2 and 7 between the fuselage sides first. Take care that they are vertical to the fore and aft axis. Close the fuselage sides at their rear up to the oblique former #13 from above and up to former #17 from below with 2mm (3/32-in.) balsa strips in order to avoid any fuselage twisting during later stages.

When the epoxy has cured, glue the engine mount of parts #8 and 9 between formers #2 and 3 in the front part of the fuselage. Next, glue the fuel tank between Formers 3 and 4 using resin glue. Take good care that the tank outlets are well glued into former #3. Screw a 1mm (1/32-in.) steel wire to Former 3 which will release the fuel tank pressure when the engine is shut off. Glue a guide between Formers 3 and 4 which will activate the wire. Next, close the front upper part of the fuselage up to the oblique former (#13) with balsa strips #10 and 11.

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second wing. (I believe it has optional dihedral for three or four channels.) By then you'll want a different airfoil (not flat-bottomed) anyway.

Goldberg also has a Falcon 56, and with a bit more span than the Eagle, the 6-ft. Senior Falcon. Both these planes can be built with optional dihedral by the plans, have semi-symmetrical airfoils, and are no harder to fly (or not much more so) than the Eagle, everything considered. They'll give you all the aerobatics you want, or possible wish, within one or two seasons, before you'd want to build some "ultimate." And it is a good idea to observe the general strivings at some busy site, noting the good and the bad, and what you like. Case the joint!

If you can get a good guy to help you learn to fly the Eagle (more quickly), you'll save a vast amount of valuable time. Do this, and you'll know whether or not you'll still have interest in radical ideas. (And sure, you can make them work, if you must.) It can take a couple of seasons to fine-tune concepts, even when you are an experienced builder.

Painful Double-take. With a Kaydet Sr. almost ready to cover, I suddenly realized that it won't fit in my car. I called Srull and said, "Guess what . . .. His answer, "Gosh, I never thought of that either." Craig and Hyon, if you guys get your driving licenses, you are welcome to instruct me in the elemental business of how one gets his plane to the flying site. You can take me there!

Bill Winter, 4432 Altura Ct., Fairfax, VA 22030.

Miss RJ/Malinas

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Make sure the stab (#34) and the polystyrene foam fuselage top (#14) are correctly shaped, and then glue them to the fuselage sides. After sanding the fuselage top as shown, cover it with one coat of medium-weight fiberglass and one coat of light fiberglass. Sand it smooth and butt-joint the fin #29.

Re-check the tightness of the fuel tank before closing the front bottom of the fuselage, and then apply a 10mm (⅜-in.) balsa strip between formers #3 and 4. Make a notch of 20mm (13/16-in.) radius into the balsa strip for the tuned pipe. Cover the notch with three coats of medium fiberglass cloth. Cover the engine mount area in the same way.

The engine cowl #27 should be sanded from a balsa block and then carefully fiberglassed. The cowl is held in place with one screw. Place the servo rails #24 into the fuselage, fix the pushrod guides for the rudder and elevator into their proper positions, and then cover the remaining part of the lower fuselage. The rudder servo should be located on the right when viewed from above; when it is rotated to its leftmost position, it should activate the engine shut-off mechanism. Check the operation of both servos carefully—both rudder and elevator should operate freely but with no lateral movement.

Attach the wing to the fuselage using two 4mm (5/16-in.) wood screws. The screws thread into part #23 which is made up of two 6mm (¼-in.) plywood layers which are glued between the fuselage sides. The leading edge of the wing is held in place by an 8mm (5/16-in.) hardwood dowel inserted into a duralumin tube (#43).

The 1mm (1/32-in.) plywood wing fillet #21 fits between the fuselage and the wing and should be glued to the fuselage while the wing is bolted in place to assure that it fits tightly. After this dries, glue the remaining fillet parts #22 in place, and sand the wing fillet to the shape shown on the plans. Glue polystyrene #19 to the wing bottom and the rear part of the fuselage, and sand it accordingly. Cover the polystyrene parts with one coat of medium and one coat of light fiberglass cloth. When hardened, attach the tail wheel #31 to the rear of the fuselage, and glue a 2mm (3/32-in.) cuprextit bracket into the wing for the attachment of the tuned pipe.

The 4mm (5/16-in.) landing gear legs are fixed in hardwood blocks #41 sealed with any suitable product and covered with 1mm (1/32-in.) duralumin plates #42 so that the bottom wing area is smooth.

Sand the fuselage to the correct shape, and cover it with two coats of medium fiberglass cloth up front between Formers 2 and 4 and with one coat of medium fiberglass cloth over the rest. Cover the empennage and wing fillets so that they are

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smooth. After a thorough sanding, cover the fuselage once more with light fiberglass cloth. When the epoxy has hardened, wet-sand it again with fine sandpaper, and coat it with your favorite finishing epoxy. Take good care with the surface finish as imperfect work will affect the flying performance.

Trimming and racing. The position of the center of gravity (CG), the quality of construction, and the weight (which should not exceed 2,200g, i.e. 4 lb., 14 oz. with empty fuel tank) have a decisive effect on the flying performance. Needless to say, the model must be straight and have an excellent finish.

Prior to the first flight, the model should be balanced so that the CG corresponds to the plans. All radio system operations must be checked, and the check should be repeated with the engine running at full revs.

Trim the model during the first flight, and adjust the pushrods after landing. Carefully move the CG during the course of further flights to find a position which suits you for best control of the model. The model is naturally more responsive to rudder and elevator movements when the CG is moved backwards and vice versa. A well-tested and trimmed model should always be slightly nose heavy—never the reverse!

The main purpose of test flying is to find the optimum CG and best combination of rudder, elevator, and aileron travel limits.

We used a Modela MVVS 6.5 GRRT engine with an MVVS tuned exhaust which turns a 200 x 150mm prop 21,000 to 22,000 revs on the ground. Never use a plastic prop! Sooner or later it is likely to tear apart. The resulting vibration will damage or destroy the model and the engine. Use only a turned metal spinner which must run true.

Should any disturbing vibrations occur, stop flying immediately and try to find the cause. Do not fly the model again until a determination is made, as it may well lead to a crash. The most common causes of vibration are a loose or unbalanced prop, loose engine mounting screws, loose wheel or landing gear leg, or an imperfect matching of the wing with the fuselage. Vibrations represent the most serious threat to a Pylon Racing model, as they also damage the servos—the durability of which is then limited.

During test flying, try to practice seriously with your mechanic. Fly on a Pylon race course only. Random flying in open sky has no purpose at all and is hazardous! A test flight should not be much longer than a competition flight. Never forget about safety! F3D model flying is especially exhausting for the pilot. It is best and most effective to test fly often (at least once a week) in any weather, but with a reasonable number of takeoffs. Check your model carefully after each flight. Clean it with a good cleaner, and preserve it with protective wax.

Radio Technique/Myers

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in the old even-numbered frequencies.

A look at my Cox/Sanwa 8016 test results above should convince you that that receiver (and by implication, its matched transmitter) must be considerably off frequency, to respond so well to a signal 10 kHz away from the nominal value for the crystal. Since crystals with an accuracy of .001% (±725 Hz) are easily obtainable today (most of the transmitters with plug-in crystals use them), fixing this part of the problem should be quite easy.

A meeting of hobby and industry representatives was called at Toledo by Frequency Committee Chairman Fred Marks to discuss the problem of "crossover" users, specifically car and boat operators using aircraft frequencies. One thing was revealed by the meeting: We aren't the only ones upset by the misuse of frequencies. Several useful suggestions were developed, and it was obvious that the major sales outlets want to cooperate in a program to educate (and, it is hoped, control) abusers ofthe RC operating privilege. Expect to start seeing labels on transmitters specifying what they are to be used for (surface-only or aircraft-only).

About those scanners: The July issue has only been out for a couple of weeks, and I have been swamped with calls about scanners. Please contact your District Frequency Coordinator to borrow the scanner assigned to your AMA district. You can learn a lot that way.

While we are on the subject, take out the July 1986 issue of *Model Aviation*, turn to page 36, and correct George Wilson's address to 82 Frazier Way, Marstons Mills, MA 02648. Believe it or not, two of my calls came because he had moved from the published address.

About those RF modems: Recently, I received a package of literature from Mr. G.F. Vargo, VP Engineering at EST, Kennewick, WA 99336, manufacturers of the ESTeem wireless modem. Mr. Vargo explains that the ESTeem Wireless Modem is "...licensed under Part 90, Subpart K of FCC regulations..." and is "...the only RF modem on the market" that he is aware of. Further, the ESTeem modem "...utilizes a digital phase lock loop in conjunction with a synthesizer for frequency generation. The frequencies start at 72.040 and continue to 72.960 in 40 kHz steps..."

From the ESTeem brochure, I gleaned the information.that the receiver works on 12 VDC, uses dual conversion, and has a sensitivity of five micro-volts. This information was presented in reply to my column, in which I noted that a press release in another magazine had quoted use of both odd- and even-numbered RC frequencies, which I doubted (May '86) could be the case.

Mr. Vargo's letter continues "...To insure that modem users are aware of the possible conflicts with the RC modeler, a note stating this fact is displayed on the transmitter and receiver frequency-select charts in the ESTeem Operating Manual, encouraging the non-usage of the (6) RC frequencies." A copy of that page of the manual was included, and the shared channels are marked, exactly as he claims. I'm sure you know that ESTeem is under no obligation to do that for us.

"...the ESTeem does not use any of the *new* channels assigned to the RC modelers. The

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