



# Skywriter



Monthly Newsletter of the Calgary Ultralight Flying Club

## October 1998

### Across The Wing

by Wif Stark

There has been lots of flying activity in our club since the last newsletter. Some projects have been completed as well.

The impromptu flight that Wayne Winters organized to Black Diamond in early September was a great success. Several good things came out of it. First of all, thirteen airplanes participated - not bad for an event that was 'planned' the night before - we should 'plan' the night before more often. The folks at Black Diamond who were waiting for more sunlight so they could begin the day's gliding, said they quite enjoyed the sight of so many Ultralights flying in for an invasion. The Film Crew who were also participating on behalf of the Outdoor Life Network, got some great footage that will be added to their cross-Canada ultralight flying story which they are building for the network. Some of you, who were interviewed, may even get your 15 seconds of limelight.

The other good thing that came out of this was the sale of Jim Creasser's Easy Flyer to the Film crew who have since added equipment to make it an aerial camera platform. They seem well pleased with how well this airplane was built, how well it flies, and how suited to the task it will be with so much flying ahead, often out of rough air-strips scattered all over the

country. The publicity of this airplane showing up again and again in future story segments will hopefully give Wayne a reason to build more of these rugged beasts for future customers.

Carl Foreman's TEAM mini-max has been completed and flight-tested since our last newsletter as well. Congratulations, Carl - you've built a beautiful airplane that should provide years of UL-joy !

Another cross-country adventure was the flight that was taken by the Rans-S12 and the Super-Koala to Del Bonita on the Alberta-Montana Border. I found the flight exhilarating but also tiring as we covered almost 390 air-miles in one day. I do love the Koala's miserly thirst (14 litres/hour at 65 mph IAS). Ed D'Antoni describes this adventure in his article elsewhere in this issue.

Ed has also recently attended a Transport Conference at which he had an opportunity to chat with a Transport Canada Official about some of the new NAVCAN charges. The individual stressed that TC does not wish to see any per-use charges incurred for services such as flight-plan filing or weather reports, as they feel strongly that such fees would seriously undermine their mandate to help provide safer flying in Canada. By now most of you should be aware of the fact that Ultralights, Gliders and Powered Parachutes will be exempt from the new annual NAVCAN fees, and GA planes under 1200 lbs. gross will be subject to an annual \$60 fee without an additional per-use fee.

Our annual fly-in/barbecue on the 13th was a great success - as a barbecue. With plus-20 knot winds, you all wisely came by land-transport, save for Bjorn Horvik in his Aeronca Chief and Ken Johnson in his 618-powered Renegade. These two intrepid flyers provided a lovely air-show before we all disbanded, which was a lot of fun to watch - and the price was right.

See y'all at the meetin' (Oct. 8th).



Bjorn Horvik's Aeronca Chief

- picture by Stu Simpson

# Mailbag

Hi!

Last Sunday (*Sep 6*), we had a small Fly-in at our small airport; No UL because of strong winds, but quite a few light planes. If you want to have a look:  
[www.decollage.org/gerg](http://www.decollage.org/gerg)

I am building a flying flea, if you want to know more about the flying flea story, just go to:  
[www.decollage.org/paulp](http://www.decollage.org/paulp)

Regards,  
Paul Pontois

*Editor's note: Paul is a long-time member of the CUFC. He is very active in the ultralight community in Quebec. Paul's e-mail is: [pontois@boutique.atou.qc.ca](mailto:pontois@boutique.atou.qc.ca)*

# Destinations

by Andy Gustaffson

Saturday morning. Stu had phoned a bunch of people for a flight to Linden\*, but most of them had made other flight plans. (\*See Destinations in the Skywriter July '98). I arrived at my hangar at 07:00 and fueled up, did a thorough walk-around, found no anomalies except the bugs on the leading edge of the wings. I'm also always looking for that loose or missing bolt .

The killer cow, in my pasture-airfield seemed to have mellowed over the summer and just gave me a brief glance as I thundered past her on my takeoff run. The odd bump meet me as I climbed to my cruising altitude of 4000'. Ten minutes later I touched down on the golf green runway at Kirkby's. Taxiing in to the parking area I found Carl Foreman and his wife eagerly assembling their Mini-max aircraft, fresh out of the paint shop. He has done a great job building his aircraft and will be a grand addition to the U/L fleet in Calgary.

With empty bellies, Wilf, Stu and I finally got airborne from the Wildrose strip at around 09:30. The late morning's turbulence was starting to set in and we had to climb to 4700' before the air smoothed out. Our ground speed was 10 miles/hr less than our indicated airspeed and we settled in for a nice and scenic flight to one of the best breakfast spots in southern Alberta's Ultra-light world. There seemed to be a lot of traffic this morning. We spotted a gaggle of U/L's heading south as we reached altitude. It was the Indus squadron of Beavers and E-Z fliers. They had probably sampled the fair at Beiseker airport restaurant and taken in the parachute meet. Am I right? Nice to see so many Ultra Light airplanes in the skies. Maybe one of these day's we can gather and fill the skies with the entire fleet of CUFC aircraft that hide on airfields here and there.

At this altitude the view is breathtaking, especially when the day is clear and the visibility is 30 miles plus. The towns of Irricana and Beiseker are easily located and are found where they should be according to the charts. We stayed well clear on the west side and set our heading at 0 magnetic. Going line astern, we set up for runway 34 with a 5-7 mph cross wind from the east. The wind was shifting to what ever it wanted and as the day wore on it got more and more unpredictable. The power lines on the approach to runway 34 are very hard to see and one wants to clear them with a few feet to spare. This can make you come in too high and a good side slip is in order to save you from going around. My Challenger side slips beautifully and with a lot of runway to spare I did not have to use the stubble fields to come to a stop. The runway is an estimated 2000' long and the altitude 2900' asl. We rolled in and parked on the mowed parking area along the main street and were greeted by a number of onlookers. Just like in those good old barnstormer day's. The Country Cousins restaurant is just a stones through away and once inside we had to wait for a table to be vacant before we could sit down. This place is popular. There is nothing like the friendliness of a small town. People greet you and stop to exchange a few words. The stories about the food and the service was

true indeed. Wilf ordered a soft boiled egg and a piece of chocolate cream pie and toast. Ah, those Germans.

An hour later we were on our way back to the airfield. There were a number of cars parked to watch the spectacle when we took off. The daytime heating had made the thermal activity very lively. We bucked the churning air mass all the way back, but found it a very good experience. Today's ultra lights are strong and reliable and built to take the Alberta winds. At Kathyrn, I announced my departing turn to the west and watched Wilf and Stu disappear in the distant south. Back at my field, the killer cow looked at me as I landed and taxied back to my hangar. She was on duty again.  
Happy Landings.

## Skywriter

Skywriter is the official newsletter of the Calgary Ultralight Flying Club and is published 12 times per year. Articles and letters are very welcome and should be addressed to Bob Kirkby, Bernie Kespe or Wilf Stark.

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**Calgary Ultralight Flying Club**  
Meetings of the Calgary Ultralight Flying Club are held on the second Thursday of every month, except July and August, at 7:30 pm, at the Northeast Armoury, 1227 - 38 Avenue NE.

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## Destination: USA

(or the closest border crossing to  
Calgary)  
by Ed D'Antoni

Some CUFC members recently made a flight to the Canada-US border. Here's the tale of our adventure.

The plan was to land at either Del Bonita or Coumts/ Sweetgrass; two airports whose center lines are on the Canada/US Border. Two aircraft participated in the flight; a Fisher Super Koala, piloted by Wilf Stark, and a Rans S-12. The Rans would be piloted alternately by Don Ward or myself. Rans co-owner Barry Haliwell would come along as passenger. Barry and I would alternate driving the ground support vehicle. Wilf was to meet me at Ben Stefanich's farm at 7 AM Saturday, September 12. We planned to fly to Okotoks (Don's home town) where we would meet with Barry and Don.

At 5:30 AM I downloaded the NAVCAN forecast which called for early morning 13 knot winds at 300 degrees (almost directly at our backs), with afternoon winds changing to 15 knots from 200 degrees. I arrived at Ben's at 6:15 AM. I had washed, waxed, fueled and checked out the aircraft the previous day, so after the preflight

inspection I decided to fly to Kirkby's to see how Wilf was doing.

Landing at 6:45 AM, I discovered Wilf's aircraft loaded, engine running and ready to go. Except for one thing; he left his headset at home. Wilf took a headset out of the Rans. Then I flew back to Ben's and "borrowed" another headset from a friend's Mooney. I jumped back into the Rans, flew over and circled Kirkby Field until Wilf was off the ground and headed for Okotoks. My airspeed was about 60 mph

departure from Ben's until I shut down at Okotoks. Wilf's flying time was 0.3 hours.

The cross wind at Okotoks was as severe as I have ever landed in. I seldom bother side-slipping to keep the plane lined up with the runway. I usually crab into the wind and straighten out at touchdown. But this time I resorted to sideslipping. I was on the apron in time to see Wilf do a perfect wheel landing; I was impressed!

I drove the ground support vehicle from



*The Rans and Koala at Del Bonita*

with the GPS indicating 80+. The Hobbs indicated 1.0 hrs. from my original 6:20

Okotoks to Ft. MacLeod while Barry and Don flew the Rans, with Wilf following. The two aircraft were visible from the road for most of the drive. I saw and heard Don do a couple of 360's so Wilf could keep the Rans in sight. The flight distance was 74 miles with a flying time of 1.1 hours. Driving time and distance was not much more.

While I was filling the three 25 liter fuel containers at an Esso station on the airport road my cell phone rang. The stressed voice of Wilf blurted out, "Ft. MacLeod is NOTAM'd closed for 3 days for a drag racing event. We landed anyway and have 10 minutes to get out of here. Someone is at the gate to get you through to us with fuel, they can't start the race with us on the runway".

I was at the airport in 5 minutes, I got to drive through the pits and timing lights. Not being at a drag race for over 25 years



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and after seeing the new style of drag  
(continued on page 4)

USA - continued from page 3

racers and how well organized the event was, I will make a point of attending next year's event.

We didn't have much time to discuss the next leg, Ft. MacLeod to Del Bonita. The distance to Del Bonita is 56 miles at a heading of 150 degrees. However, the huge Prairie Provincial Park covering most of the route is also a no-fly zone, so one has to either fly east to Magrath and turn south, or south to Cardston then turn east to Del Bonita. The Magrath route is 60 miles while the Cardston route is 62. Winds were such that the Cardston route would be faster. There is an airport at Cardston, but not Magrath. We stuck to Magrath, our original plan.

I had calculated and entered the Magrath coordinates in my GPS. Wilf had entered the same coordinates. Coutts, our alternate destination was a distance of 81 miles at a heading of 124 degrees. The heading to Magrath was also 124 degrees.

Don was flying the Rans, I was doing the radio work and Barry was driving. Our takeoff was to the west with a left turn at 500'. At cruising altitude, Don made a turn toward the southeast, then started checking the map for landmarks. About then I decided to compare the map to the GPS. Our heading was almost dead on, but the GPS indicated we should be heading to the southwest. Obviously, I had entered the wrong coordinates for Magrath.

Remember, Wilf had entered the same incorrect coordinates.

A sort of panic now set in. Wilf was

already stressed when we left Ft. MacLeod, and I wondered how he was doing now. Making radio contact with Wilf, revealed he was following the erroneous GPS coordinates.

Wilf's plan had been to follow us, but after a few 360's we knew we would not be able to make visual contact with him. In the end our trip took us to Del Bonita via Magrath, while Wilf went via Cardston. (We have a communications transcript of the entire



*The intrepid aviators reach the Canada/US border.*

flight. If all parties involved concur, we will publish it in the next newsletter).

Over the radio, Wilf supplied us GPS distances and bearings to Coutts and Del Bonita. Thus, we were able to direct him to the destination. We both reached Del Bonita at about the same time. The most scenic part of the trip were the rolling hills and towering ridges south of Magrath. At a distance of about 10 miles south of Magrath there is a ridge (elevation 4300 ft.) that stretches east/west as far as the eye can see.

We reached Del Bonita at noon, had a chat with the customs officials, took pictures and ate the lunch that Barry had prepared. It's a good thing Barry brought food as the nearest restaurant was at Cardston.

Around 12:30 the wind became calm, then changed to southeast. Afternoon winds were forecast to be 200 at 15 knots.; a tail wind home. Since Fort MacLeod was closed our new route was Cardston, 24

miles; Claresholm, 58; and then Okotoks 51.

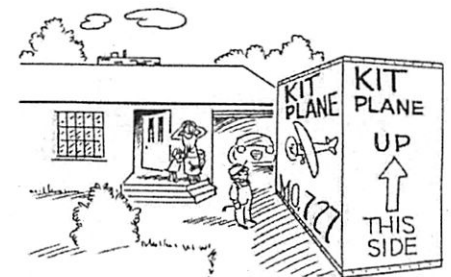
I was relegated to driving for the first leg. Flying time to Cardston was 0.4 hours, I met the flyers at the Cardston Airport and drove the motley crew to Cardston. Don treated us to old fashioned ice cream sundaes and shakes at a neat 50's style cafe. After some sightseeing and a leisurely stroll around town, we headed back to the airport.

I piloted the one hour, 58 mile bumpy trip to Claresholm. We could not find smooth air anywhere between 1000 and 1500 ft. AGL. On arrival we were greeted by a couple of members of the Claresholm glider club. They hosted us for the extra hour Barry was enroute.

The 51 mile leg to Okotoks took Don, Barry and Wilf only 0.7 hours. That is an average of over 70 miles per hour, including taxi time and climb to altitude.

Winds aloft provided a 25 mph tail wind. At Okotoks we said goodbye to Don, then Wilf and I headed for home. The last 26 miles took only 18 minutes. Arrival time at Ben's was 7 PM. After fueling, paper work and tie down the sun was starting to set. Ben and I had a coffee and I was home by 8:30 PM.

It was a long, but successful, and fun day. The odometer on my GPS indicated we had flown 388 miles, while the odometer on my car indicated 801 km (480 miles). I can't wait to do it again.



## FAIRINGS, FITTINGS AND AIR SCOOPS

compiled by Bernie Kespe

This month's edition of "Kit Tips" continues with some more ways to form the fairings, cowl bumps and air scoops you can make at home with a little effort and ingenuity. As I mentioned in the first part of the series, all of them are made of materials you can purchase at your local hardware store.

### Acrylic Bumps

Acrylic is so easy to work, I wonder why we don't use it more often to make parts for our airplanes. (A common brand of acrylic is Plexiglas.) This bump is heat-formed over a wooden model. An outline of the base of the bump is traced onto a piece of 3/4-inch plywood that is an inch larger around than the bump. Cut the hole 1/8 inch larger around than the outline, then smooth the inside of the hole and round the edge on one side. Nail or glue the form to another piece of plywood the same size. Measure the length and width of your form and cut your acrylic in that shape, but one inch wider all around (Photo 1).

Now you're ready to heat the acrylic. I use a little countertop toaster oven, which works just dandy. I set the temperature control to 200 degrees and placed a test strip over something round like a wooden

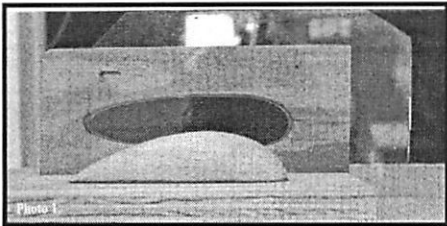


Photo 1. Forming acrylic bumps requires a wood base, a form, a sheet of acrylic and a pressure plate with which to press the heated acrylic down over the form.

dowel inside the oven. I increase the heat until I get a good sag from the test strip of acrylic.

Then, if there is room, I put the wooden form in the oven and lay the piece of acrylic to be formed on top of it. Through the glass door of the oven, I watch it sag, and when it's ready, I take it out of the oven and force the piece of plywood with the hole in it (the pressure plate) over the acrylic-covered form. If I was lucky enough to sneak the oven out of the kitchen to my shop, I clamp one side of the "sandwich" in my vise and draw the other side tight with C clamps.

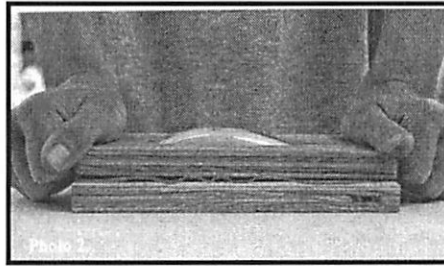


Photo 2. If the acrylic is thin enough, pressing it down over the form can be accomplished by hand. The method is similar to vacuum forming.

The acrylic I used in this case was only 1/6 inch thick, so I was able to press it down over the form just by leaning on it (Photo 2). If you use your kitchen oven for this, leave the door cracked open about 1/4 inch because some types of acrylic give off combustible fumes when heated—you don't want them building up in your wife's oven. I've heated dozens of chunks of acrylic in kitchen ovens and even in a friend's pizza oven, and I've never had any trouble.

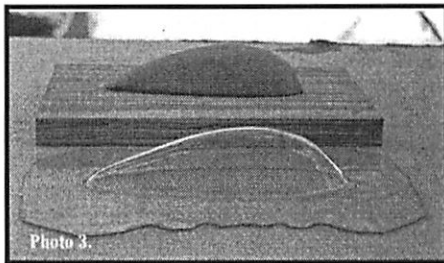


Photo 3. If you don't like the results of your first attempt to form an acrylic bump, just re-heat and reform it until you are satisfied.

When the acrylic has cooled and hardened over the form, you can take the sandwich apart and begin finishing your new bump (Photo 3). Trim the flange, sand it with

150-grit sandpaper, then prime and paint it. You can glue or screw it in place, but do not rivet it!—or you may crack the flange.

### Papier-mâché Bumps

Remember the old newspaper and flour paste you mucked around in back in elementary school? Well, in this version of papier-mâché, instead of newspaper, I use the tough, tan colored paper towels you find in gas stations and public institutions. I diluted white Elmer's glue so that it brushed easily, and then soaked the paper to bond the layers together.

Make your form and attach it to a piece of plywood 1 inch wider around than the form. Use Plastic Wood, spackle or caulk to make a fillet between the form and the board. Paint or varnish both the form and the board. After the paint dries, apply at least three coats of car wax to the form. Polish the waxed surface a bit, then cut a bunch of 1/2-inch-wide strips of paper that are a couple inches longer than the form for your bump.

Now lay up 6-8 layers of these strips in your best papier-mâché style, criss-crossing each layer of strips at 90° and 45° angles. Let them dry on the form for about 24 hours, then pry off and let dry completely (Photo 4).

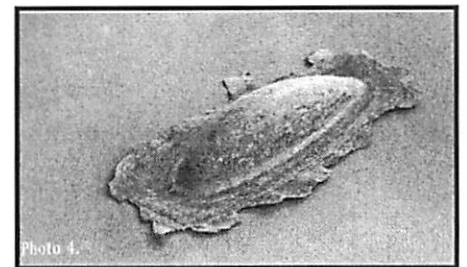


Photo 4. Papier-mâché bumps are formed by criss crossing 6-8 layers of saturated paper towel strips, pressing them down over the form and letting them dry. Trim the excess flange and varnish to harden the bump.

Next, sand it with 150-grit paper and spread a layer of spackle all over it. Use either spackle or dry wall taping compound because these materials are porous, allowing the final sealing coat to (continued on page 6)

Fairings - continued from page 5

soak through them and make the form more solid. Sand the excess spackle away and seal the bump inside and out with a couple coats of floor varnish or thinned Duco cement (one part lacquer thinner to two or three parts Duco cement). You'll be amazed at the hardness, toughness and lightness of the finished bump.

### The Disposable-Foam Method

When you're making only one or two bumps or scoops, it may be more efficient to make the form out of styrene foam. After the shell cures, you just dig the foam out. With this method, you don't have to worry about draft angle—the slight outward sloping of the sides of your form at the bottom that enables you to slide the hardened shell off the form.

Suppose you want to make a teardrop-shaped fitting for around your tail wheel. If you use standard molding methods, you have to form the teardrop in two separate pieces and cement them together. Using a form made of foam simplifies the process greatly because you just wrap your shell material around the foam and, after it has cured, pry out the foam and cut out the wheel hole.

Using Red Devil clear varnish as the bonding agent, I relearned a couple of things. Many times in the past, I've painted styrene foam with varnish to protect it from

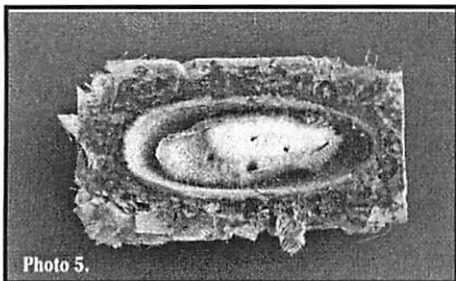


Photo 5. The varnish you use on a piece of styrene foam to protect it from polyester resins may be strong enough to eat away the foam, as shown here.

polyester resin and never had any problem with it dissolving the foam. But 16 hours



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after applying a coat of Red Devil varnish to a piece of foam for this project, the foam core was melted almost completely away (Photo 5).

Varnish doesn't cure, it dries. When exposed to air by being brushed onto a surface, the chemicals that keep it a liquid evaporate, leaving behind the hard coating

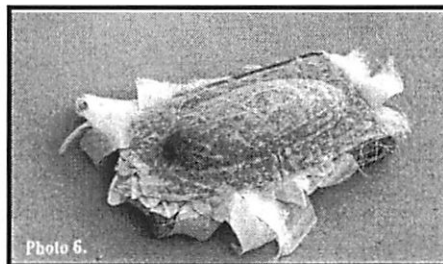


Photo 6.

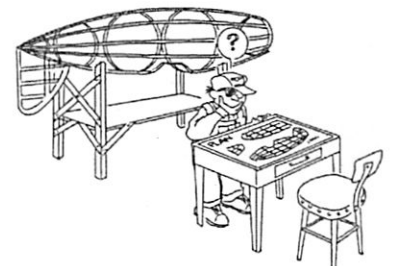
we're all familiar with. When I covered the foam with a thick shell of cloth and varnish, I trapped the gaseous chemicals between the shell and the foam. Unable to dissipate by evaporating, they melted the foam. The bump retained its shape because the outside part of the shell had hardened enough before the foam melted.

To avoid this condition, put a couple coats of varnish on the form and let them dry thoroughly before you apply the shell material. If you don't want to bother with this precaution, be careful how you handle the bump for several hours. Also, be sure to test your varnishes before you go for

broke—especially the "poly . . ." varieties—because some of their drying agents will attack foam immediately. The other thing I learned was that nearly every fiberglass fabric sold to the general public is too closely woven and/or inflexible to be draped in one piece over the forms I was using. I had to resort to the papier-mâché technique and cut the cloth on a 45 ° bias to the weave to get the flexibility I needed.

The fabric you use for the shell should have a thin, fairly open weave to reduce lumpiness and help it better follow the shape of the form. For maximum strength, however, it should not stretch. To make the bump shown in Photo 6, I used a light organdy fabric and the same finishing method I used on the papier-mâché one.

These are but a few of the methods you can use to make bumps and scoops yourself. In a future issue the final installment of making fairings, fittings and air scoops will feature Duco cement and cardboard scoops along with Plaster of Paris molds and attaching your scoops.



## SE-5-A Replica



Wing Span	23.40 ft.
Wing Area	146.0 sq. ft.
Length	18.20 ft.
Max Gross Wt	1150 lbs.
Empty Wt	740 lbs.
Fuel Capacity	18 gal.
Seats	1
Cabin Width	24 in.
Range	250 sm
Takeoff Dist	400 ft.
Landing Dist	350 ft.
Vmax	100 mph
Vcr	85 mph
Vs1 (stall clean)	35 mph
Vse (Indg config)	N/A
Climb Rate @msl	600 fpm
Service Ceiling	10,000 ft.
Std. Engine/HP	Continental C-85
Usable HP Range	85 - 115
Construction Mtrl.	Wood, Fabric
Est. Bldg.	Time 2500 hrs.

Plans	\$120.00
Kit	N/A
Into Packet	\$7.50
Video	N/A
Sold: 475	Flying: 110

A scaled down, sport biplane with look and feel of the WWI SE-5-A Scout. One of the most popular WWI replica aircraft being built today. Looks like the original design but uses far simpler construction with more modern and readily available materials. Affordable, easy to build, and

easy to fly. Specs based on C-85 Continental. Other possible engines include the C-90, 0-200 and the Lycoming 0-235.

The fuselage is a 1/8 inch ply-skinned box structure with a fabric covered turtle deck, aluminum-covered forward top section and incorporates a standard cockpit layout with a left-hand quadrant throttle, standard panel, heel brakes, parking brake, small baggage compartment behind the seat, full shoulder harness, a headrest, and folding type windshield.

The original SE-5-A incorporated a tail

skid only, but the replica is equipped with a steerable tail wheel enclosed in a dummy housing to make it appear as much as possible like a skid.

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## WINTER FLYING REMINDERS

It's that time of year when cold fronts push down from the north with increasing frequency, and the cold lingers, sometimes reinforced by snow and ice.

Most ultralight pilots resign themselves to winter's fate and store their craft for the duration. But others revel in the changes winter brings, and look forward to cold weather flying.

For those hardy souls, it is not enough to preflight their ultralights. They must also remember to dress correctly for the conditions they will be flying in and to guard against hypothermia-the body's temperature dropping to subnormal levels. The following are hints and reminders for dressing warmly, and what to do if hypothermia sets in.

*(Continued on page 8)*



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1.- If your ultralight is not enclosed, it might be worth the extra bucks to install a pod or fairing. In that way, you'll be shielded from the constant buffeting of the wind. You might even get some extra mileage out of your ultralight and increased airspeed, depending on the design of the fairing.

2. - Dress in layers. It's the best way to keep warm. If you wear a flight suit (whether it's unheated, un-insulated or lightly insulated), make sure it's large enough to accommodate several layers of clothing underneath, and still allow enough flexibility to sit comfortably without tight spots or binding,

Flight suits come in a variety of fabrics and styles, and snowmobile suits also work well. If your suit is comprised of two pieces, make sure there is a wind-tight seal between the upper and lower halves.

3. - Two of the most essential parts of your body to keep warm are your hands. If they get too cold, you'll have difficulty feeling the aircraft's controls, which could prove disastrous. Warmth and flexibility are the operative words in deciding what hand protection to buy. Snowmobile and skiing mitts that are insulated with artificial fiber can be very stiff, which will hamper your ability to grip a control stick for any length of time. Also, they are not as warm as mittens or gloves insulated with down. Although down insulated gloves are more expensive, they offer the flexibility and warmth needed by ultralight pilots. An important aspect to look for in any glove or mitten is a gauntlet-type cuff that will keep out the wind.

4. - Cold feet can be as big a problem as cold hands. Usually several pairs of socks and a pair of boots will do the job. But too many socks, or boots that are too tight, and circulation to the feet will be constricted, resulting in very cold feet. To keep the wind from blowing up your pants legs, stuff them into the tops of your boots, and/or socks. Rubber bands, or Velcro straps wrapped snugly around the bottoms of your pants legs will also do the job. If you choose to wear heavy-duty foot gear

like snowmobile boots, be aware that feeling of the foot controls will be cut down.

5 - If you don't have a face shield on your helmet, wear a hood or balaclava under your helmet, as well as some form of eye protection such as sunglasses or goggles. A common problem with cold weather flying is fogging or icing up of face shields, or goggles. Although different methods and treatments for the prevention of fogging are available, what works best is ventilation. Ski-type goggles, and some helmets and/or face shields come with built-in venting.

6. - Do you like to wear a scarf for added warmth and protection? Be sure to tuck the loose ends inside your collar or jacket. Scarves flying jauntily in the breeze can become a hazard to your health if they get caught in the propeller. No matter what you wear, be sure it's warm and loose enough to allow easy movement of your arms and legs. It also wouldn't hurt to pack a down-filled sleeping bag and/or jacket, as well as quick-energy foods such as candy bars and a thermos of hot chocolate or coffee, just in case. If you have an engine-out over the middle of nowhere, or if you become cold, measures must be taken immediately to guard against hypothermia.

**Hypothermia:** If you're flying in cold-weather and start shivering, you are

experiencing the first stage of hypothermia. Hypothermia develops in five stages; each with different symptoms: **First Stage:** When the body temperature drops from 98.6 degrees to as low as 96 degrees F. the first stage is characterized by intense shivering.

**Second Stage:** Violent shivering, sluggish thinking and sluggish speaking characterizes the second stage, when body temperature drops to between 95 and 91 degrees F.

**Third Stage:** When the third stage is reached, body temperature has dropped to between 90 and 86 degrees F. At this point, shivering stops; the victim's skin is blue and puffy; thinking is confused; coordination is poor.

**Fourth Stage:** At this level, body temperature ranges between 86 and 78 degrees F. and the person becomes unconscious.

**Fifth Stage:** At this extreme, symptoms are usually cardiac arrest and death.

If you start to shiver, especially if you're flying, land immediately. Because your body needs heat, you need to find shelter, and eat and drink energy-producing foods. If any of the other symptoms of hypothermia are present, medical help should be obtained as soon as possible.

Remember, cold weather flying can be fun and exhilarating. But extra precautions should be taken to make it safe as well.



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