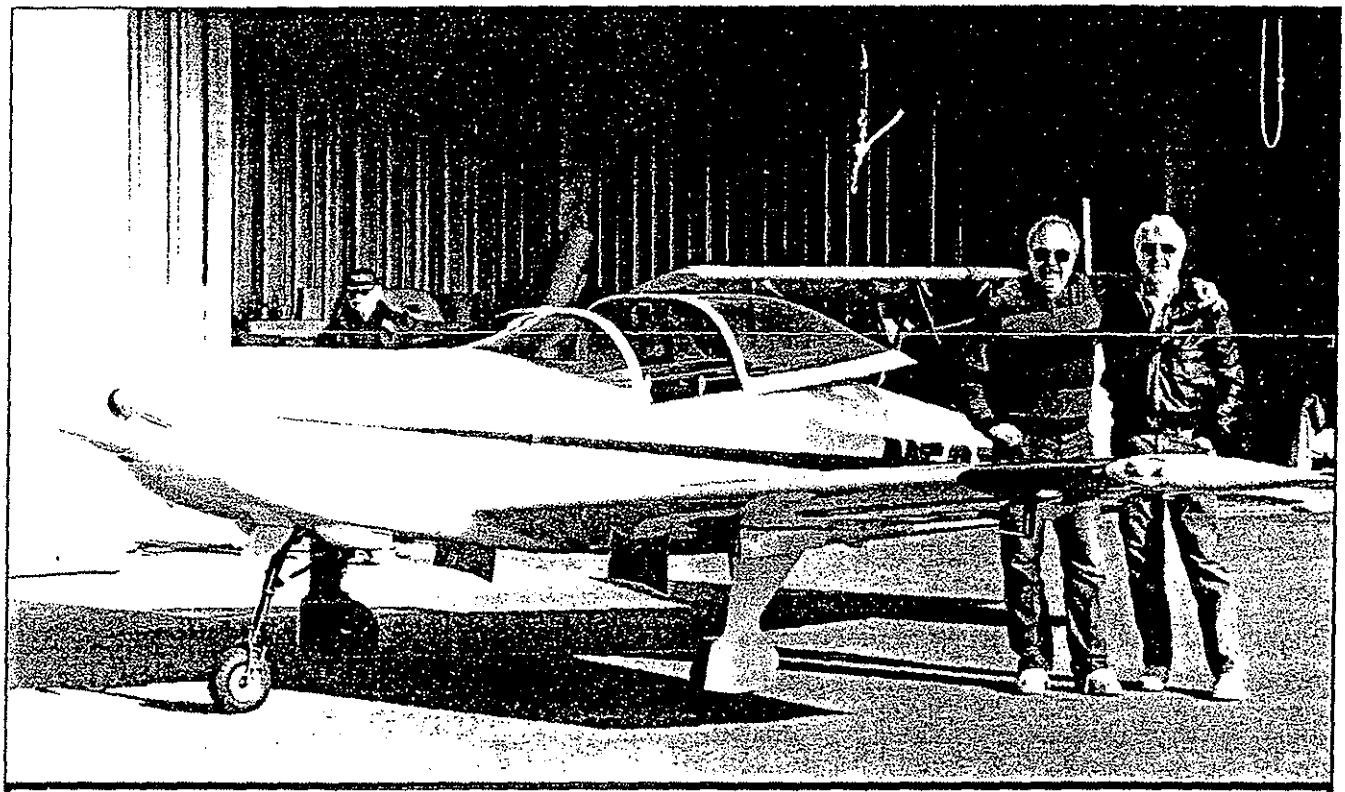
BUILDERS & FLYERS
GP-4
NEWSLETTER

THE OFFICIAL VOICE OF GP-4 BUILDERS ALL OVER THE WORLD

Volume 39/40 Fourth & Fifth Issue of 2001



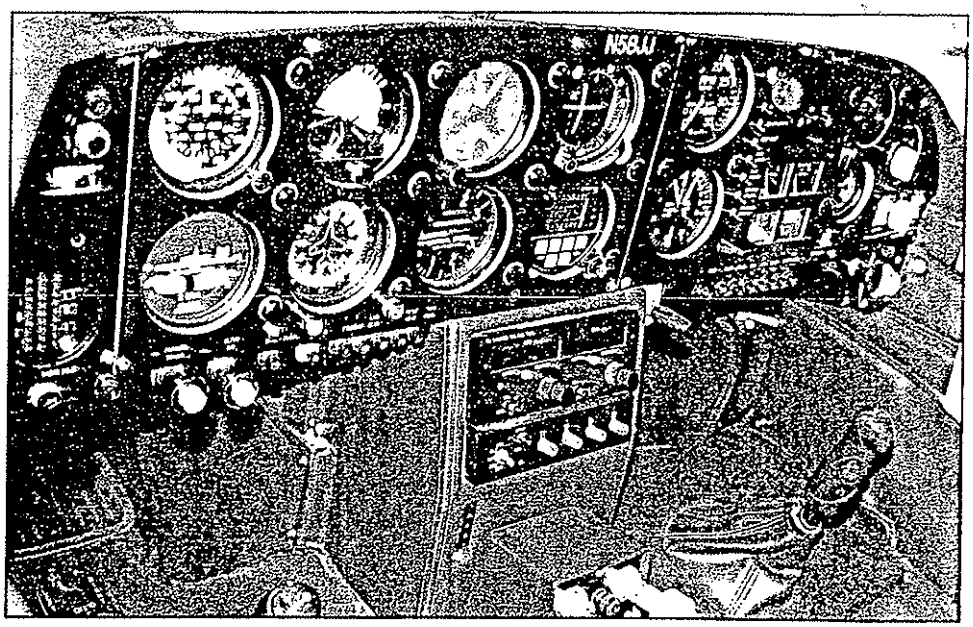
Jake Jackson and George Pereira with Jake s Beautiful GP-4

Dear Builders:
I am sorry that I have not contributed much to the newsletter. Here is an update on my project. Enclosed are photos of my aircraft and instrument panel.

The Panel

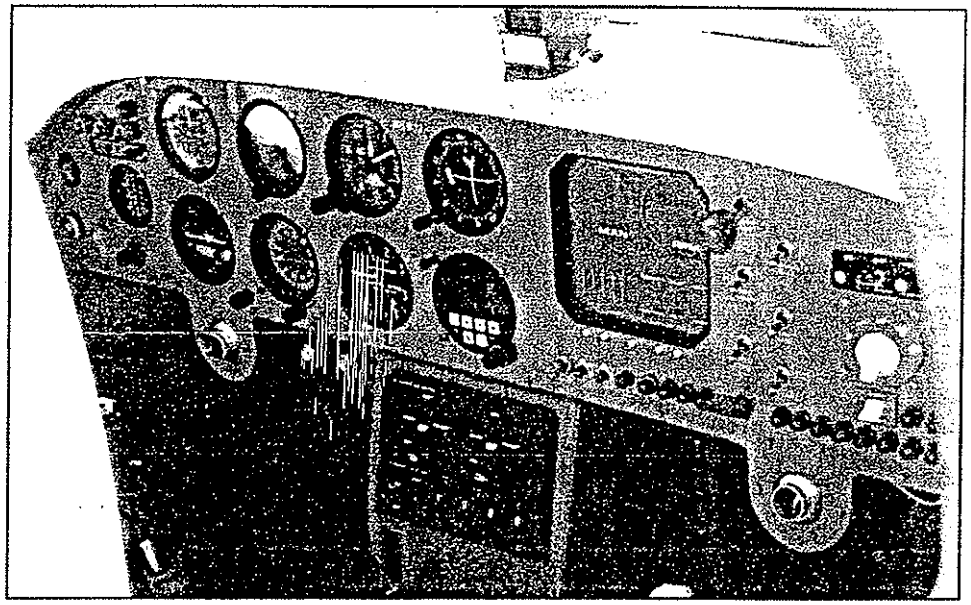
I decided to change my panel on 58-JJ in the early 95 s after a friend of mine named Mike Dubey who owns Advance Marine Service in Citrus Heights assured me it was a piece of cake. He said it would only a few days to rewired the panel reek on the outside. I h my one or two day projects run into the months and this project was no exception. In designing the new panel you will also note the location of the circuit breakers and the fresh air vents. By moving the circuit breakers into the panel I gain one inch more leg room for the pilot and the passenger. I also moved the fresh air vents from each side of the cockpit to the center of the panel behind the control sticks. This change again increased the room under the panel. I blocked the NASA INLET off on the passenger side because it picked up the hot air from my oil cooler. I used one

and a half inch hose on the pilots side NASA INLETS to feed the fresh air vents for the pilot and passenger. I now get more volume of air than the original configuration and that location seems to be an improvement in the distribution of air inside of the cockpit.

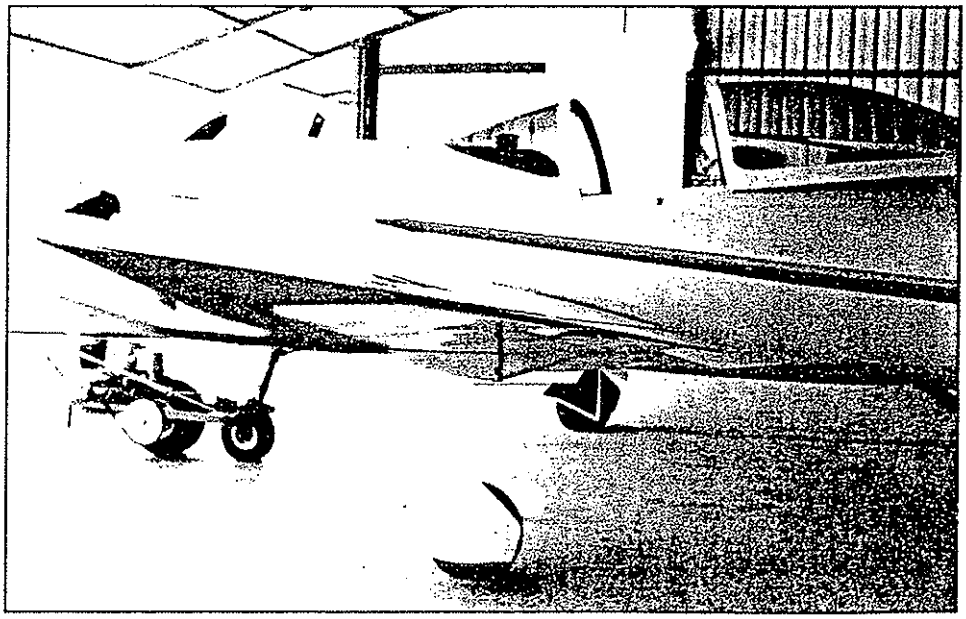


NEW PANEL

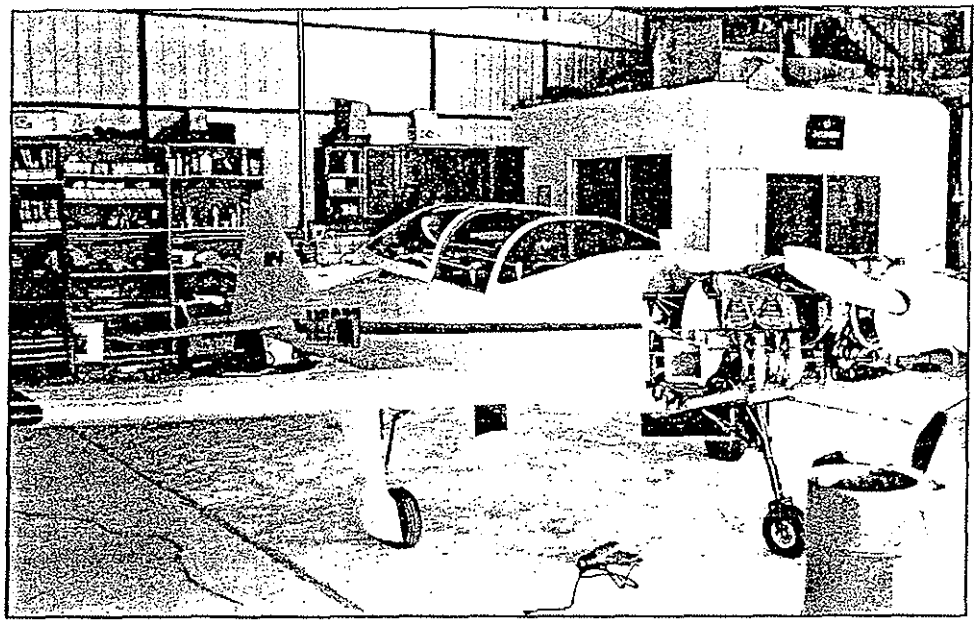
After seven months of working on my new panel, it s finally completed. The only problem I had was trying to decide what color to paint the panel. Because I did not paint my airplane BRIGHT RED like George wanted I thought I would paint the panel RED. As you can see from the pictures the VM1000 really enhances the appearance of the instrument panel and the red paint enhances the overall view . I must say it would have a lot easier to install the VM1000 when the air plane was first built. The only problem I had with this thought was the VM1000 wasn t available in the early 90 s and it took me some time to decide on spending the bucks. If any of the builders are interested in using this particular instrument I would recommend you do it before you finish you instrument panel Micro Vision also has a capacitor type fuel gauge that must be installed before closing the three fuel tanks in the GP4. For the wing tanks the sensor lays the full tank length. As you use fuel the sensor detects the amount and indicates it on the gauge. I wish this feature was available to me prior to closing my tanks. It is my understanding you add fuel to your tanks in 2 gallon increments. You note what the fuel gauge is indicating each time you add the 2 gallons until the tank is full. You then send the instrument back to Vision Micro and they BURN in the readings for each tank. This should give you a very accurate reading of the amount of fuel remaining in your tanks.

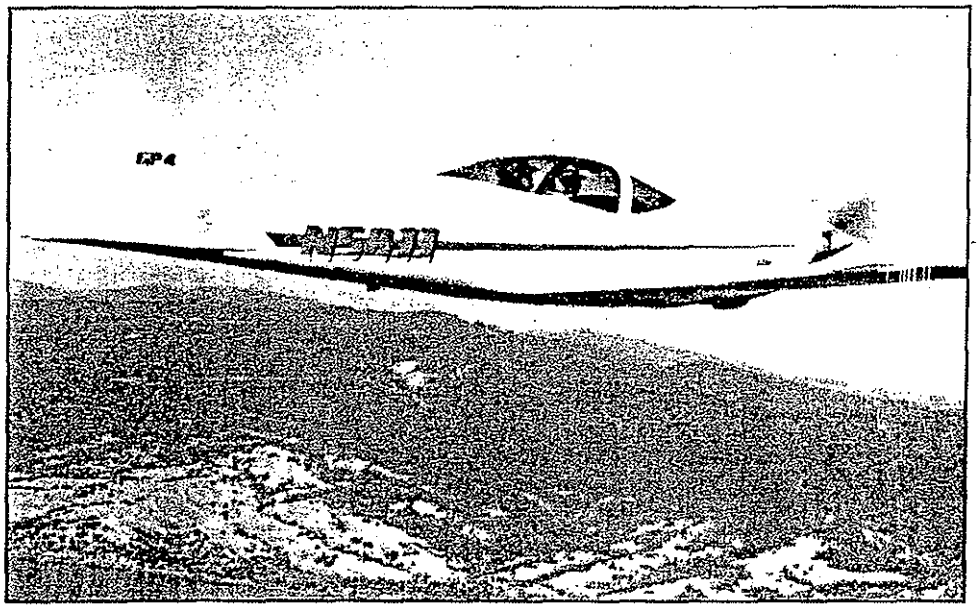


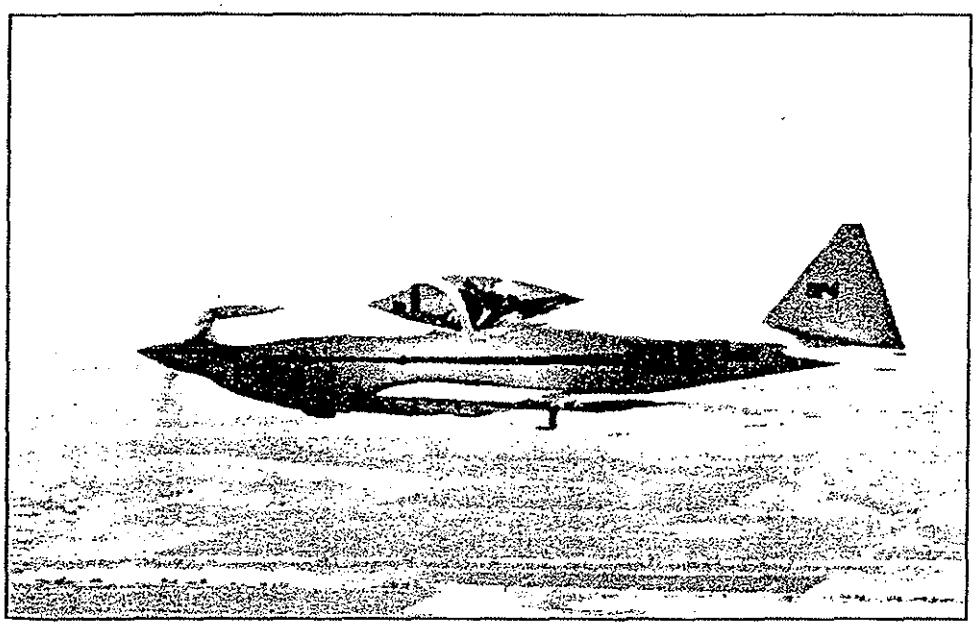
If any of the builders are interested in using this instrument you can contact VISION MICRO AT: (360) 398-1833.



On this one particular occasion, when landing at my home field, my approach speed was too slow and I was too high. Because of the aircraft s laminar wing, you have to fly the GP-4 onto the runway; not stall it as you would with a







Cessna, or other spamcan. I know this, but was lax and not paying attention to my airspeed so a hard landing ensued. The bird bounced and came down onto the right main gear. This, in turn, caused the link to break due to a weak hold-down spring The entire aircraft load transferred onto the hydraulic cylinder. The cylinder failed and the right gear retracted. Concurrently, the wing on the passenger side leaned towards the ground. I moved the stick to keep the wing from touching pavement, to no avail. As the aircraft slowed, the right wing flap settled to the pavement and minor damage happened to the flap and right elevator. A nice thing about Mauser s Field is someone is always around to help. About ten people appeared to lift the aircraft up and the right landing gear came down; then we pushed it back to my hangar.

The repairs have taken longer than expected due to home projects taking precedence. But, with the help of George (my guru and friend), everything proceeded smoothly. As he mentioned in his GP4BFN34 article, the elevators were rebalanced to account for the repainting. The elevator and flap pivot point bushings had some play in the up and down movement. I replaced them even though it was not necessary; Heck why not!

All is finished on my airplane. I am now in the process of helping a neighbor paint his RV-6. I know; it is not a GP-4, but he s a nice guy and wanted some help in the paint department.

My Words of Wisdom to all GP-4 flyers: ***Keep Your Speed Up, Pay Attention, and Safe Flying!***

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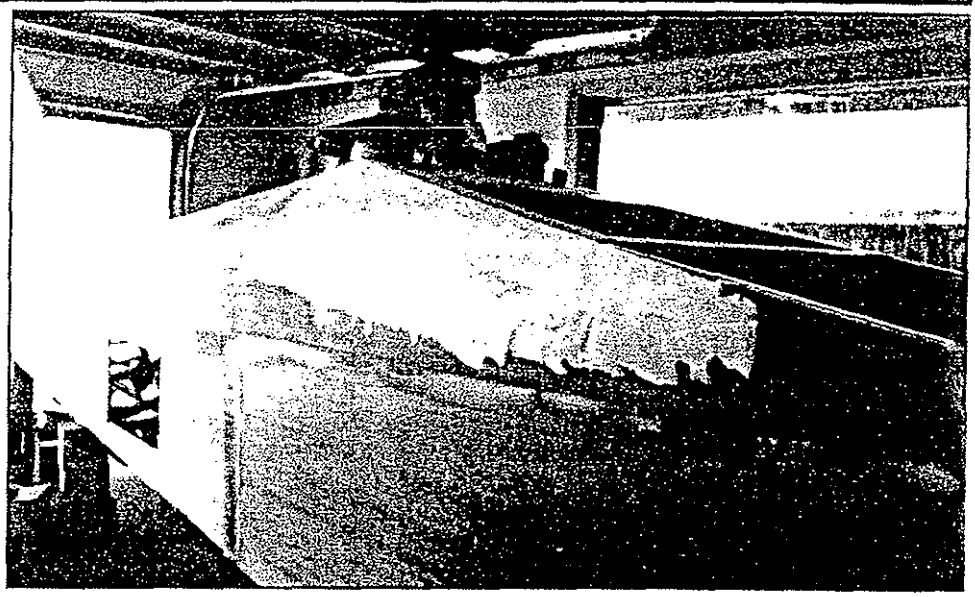
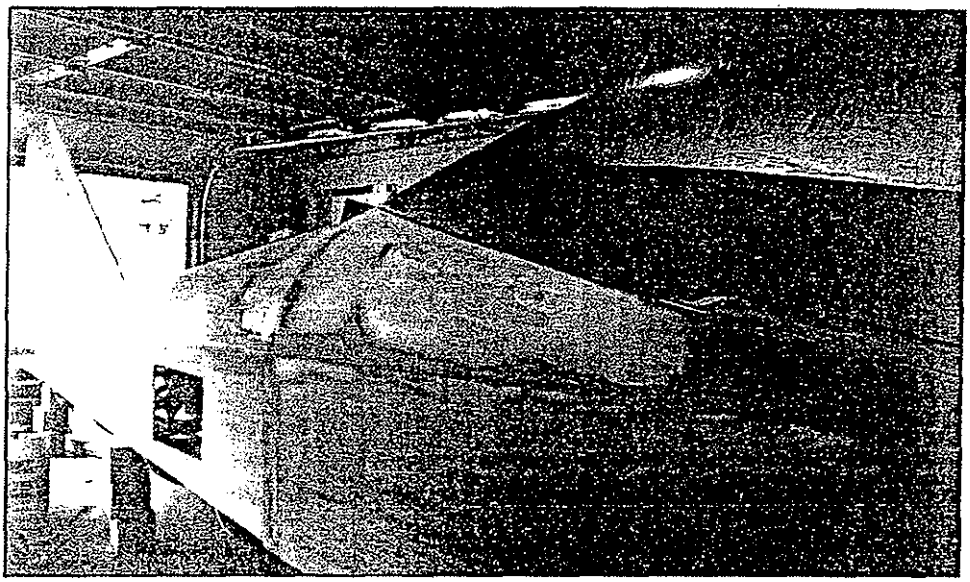
Mike Traud s Canopy Installation - Part #2

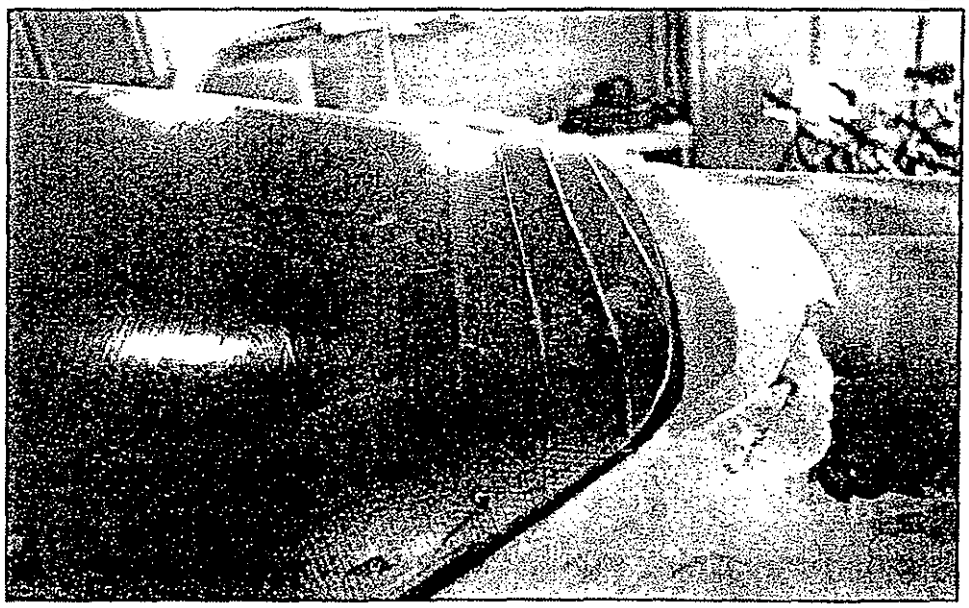
The Canopy. Part 2 of a series

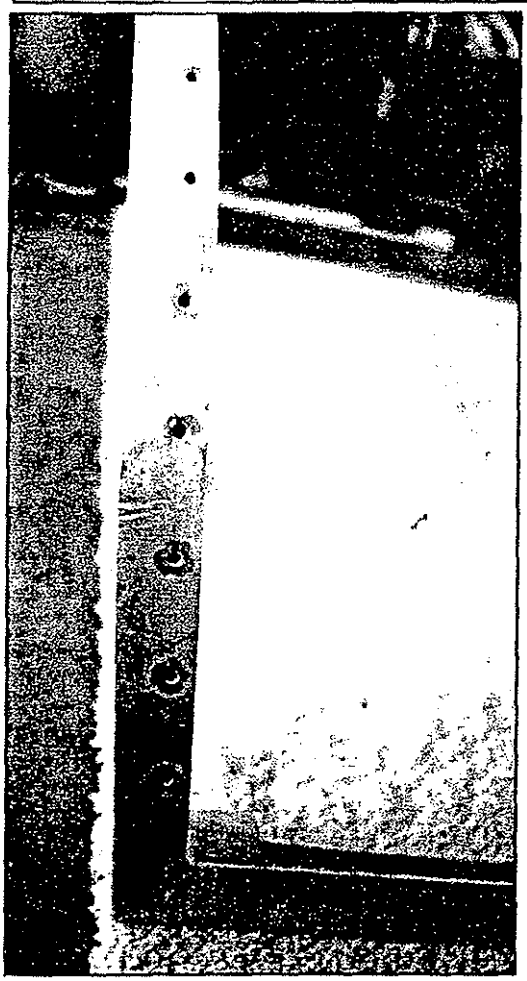
We left the first article of this discourse with the canopy crossmember having just been glued to the inside skirt/canopy base. Remember, if you are installing the Darry Capps roller bearing canopy slide modification, you must drill the 3/4 diameter holes (which are at an 11 degree angle, corresponding with the angle of the fuselage canopy base), before you install the crossmember. At this juncture in the fabrication process, it is a good idea to install the canopy slide mechanism and get the inside skirt/canopy base sliding on the rails. Your installation (i.e. the plans version or the Darry Capps modification) will dictate which hardware to install. This is straightforward - just follow the plans. However, it is important to note that the rails (i.e. the forward side rails and the aft rails) must be parallel to each other. Also, it is a good idea to have a little play in the system so that the canopy slides smoothly. Just a little play is all you need here. As you progress in the fabrication process, you may have to adjust the rails slightly to achieve smooth sliding. (In my particular installation, on the side rails, I had to bridge them 30 thousandths [.030] so that the roller pin could move freely throughout the sliding range.) The canopy actually flexes as it moves along the rails - very slightly. Also, the skirt/base/canopy assembly is such that the entire structure flexes as a function of temperature and humidity. These factors dictate that you have just a bit of play to ensure a smooth sliding canopy. Enough said here.

Once you get the rails installed and the inside skirt/canopy base sliding smoothly, it is time to install the canopy bow on the inside skirt/ canopy base. If you reference dwg. #41, upper left side, you see that the windshield bow is set at 71









degrees relative to the top fuselage longerons and 15 7/8 from the longeron top to the windshield bow top. In order to ensure the proper canopy bow angle; first set the windshield bow on the fuselage as per dwg. #41. (This step is critical because if the correct angle is not achieved, the canopy glass and windshield glass may not meet correctly. Keep in mind to factor in a slight gap between the fuselage canopy base and the inside skirt/canopy base so that the whole thing slides without touching.) Once the windshield bow is set, you can then position the canopy bow on the inside skirt/canopy base relative to the windshield bow. It is important to remember the difference in thickness of the canopy and windshield and make accommodations for these differences when setting the bows. You may have to trim either bow to adjust for the differences in glass thickness. Also, you want the bows to match thicknesses on the underside - slight trimming may be required here as well.

After the bows are trimmed (if necessary) and everything checks out per the dwg. #41, you can glue in the canopy bow and associated spruce support blocks. (I radiused the edge of the canopy bow prior to gluing in - it was much easier prior.) So we now have a complete canopy frame (i.e. inside skirt/canopy base/bow) to attach the canopy glass. Cool. With the inside skirt/canopy base/bow on the fuselage (and sliding), it is now time to start the fitting process of the canopy glass. Some pre-trimming will have to be done first before the canopy glass is of such as size to actually fit on the fuselage. Take great care and time to trim the glass as it may crack and then you will be down right pissed off at the whole affair. I used a Dremal Tool with a carbon-cutting disc and went very slowly. This worked well and resulted in a nice smooth cut through the glass. When you get the canopy glass trimmed enough to fit over the canopy frame (i.e. the inside skirt/canopy base/bow); the fitting of the glass can begin. The way to accomplish this is to use the forward edge of the canopy as a reference and make the juncture between the canopy glass and the windshield glass is a straight line. (If it is not straight at the canopy/windshield juncture, there will be difficulty in making the canopy strap and windshield strap (both fabricated from .050 6061-T6) meet properly, smoothly and flat as indicated in the drawings. (Talk with John Reinhart about how to solve the problem of the canopy and windshield glass not meeting flat, if you encounter this problem. He has a very nice solution/procedure, which yields a nice fit/finish.) After you get the canopy fit to the fuselage to your satisfaction, mark it for final trimming. Trim the canopy glass to its final form and recheck the fit on the canopy frame and fuselage. It is a good idea to double/triple check your work here as a mis-trimmed canopy is cause for several four letter expletives.

A word about canopy s from Airplane Plastics. Most builders are getting their canopies from this manufacturer. They are first class with uniform thickness throughout and superior optics. In fabricating my canopy assembly, I discovered slight differences in the canopy form as compared to the canopy on the prototype. The prototype canopy is a stretched variation of the Thorp T-18 canopy and has a slightly different form then those from Airplane Plastics. The difference is in the aft curvature or slope of the glass relative to how it sits on the fuselage. What this boils down to is the juncture of the aft canopy to fuselage is not as flat as it is on the prototype.

Continued on page 14

Buildining the GP-4 by John Evans of New Zealand

John Evans gave us his first part back in issue #34. To follow are part 2 and 3. Part 4 & 5 will follow in the next issue. - Spud

Building the GP-4

Part 2 - Work starts

By John Evans

In the first part of the series I covered the reasons why I chose the GP-4 and the necessary preliminary work before building could commence.

The next question is where to start? The plans total 65 sheets of A? Size paper and are of excellent quality with many full size patterns and drawings. At first glance the interpretation of them appears rather daunting but after going through them several times things start to fall into place, and the more I look at them the more admiration I have for designer George Pereira! Their are, however several minor errors, and due to the modification from manual undercarriage retraction to electro hydraulic quite a few deletions and changes but these all soon become apparent to the builder.

I decided to start with the wing structure for several good reasons, the first being the time of year. Starting in October would give me the whole summer to get the structure and fuel tanks done so that I could spend the winter when it is to cold for gluing making and fitting the metal hardware. The wing is also the most complex part of the aircraft as it is all one piece and has retractable main wheels, the seat rails, the control stick assembly the hydraulic pump and flap mechanism all incorporated. Fuel tanks are built into the leading edges and of course such items as pitot head, lights and radio antennas also fit into this structure. When complete I will move it out to storage while building the fuselage.

Finally the dreaming was at an end and I was ready to make sawdust! The date was 20th of November 1999; a sheet of 1/16-inch Mahogany ply was pulled from the rack and the marking out and cutting of the wing ribs began. As all the plan measurements are in imperial units I will stay with these throughout my series and only convert to Metric units if I feel it would be of real benefit to the reader.

Full size outline drawings are provided so it is a simple matter to transfer these to the ply by putting a series of closely placed prick marks through the plan onto the ply then joining these up with a flexible batten and a sharp pencil. The cord line is also transferred the same way. The ribs are then carefully bandsaw cut keeping to the outside of the line, care must also be taken to ensure that each pair of ribs are identical. The lightening holes and other cutouts are cut with an adjustable cutter mounted in the drill press. Four days & seventeen work hours later a nice pile of cut wing ribs lay on the worktable ready to have the cap strips glued on.

This brings us to the next major decision, which adhesive to use? This requires a lot of research as there are many different types and brand names and all the experts seem to have different opinions. I did the homework on this several years ago when involved in my boat building projects so it wasn t difficult to decide to stick with what I know which is the West Epoxy System. I went through 200 litres of it building my 16-meter yacht and never had a problem. It is approved for aircraft use and several GP-4 builders in the U.S.A. are using it. It is made and supplied under license in NZ by Adhesive Technologies Ltd in Auckland. One of its main features is its versatility, the mixed resin can be thinned and used as a wood sealer/preservative instead of the traditional varnish with the added advantage that components can be added without having to remove all the varnish first. It is extended with powder to make glue and further extended when used as a gap or hole filler. I keep the containers in a special cupboard fitted with a thermostat and light bulb so that a constant temperature of 20 degrees C is maintained and have set myself a minimum working temperature of 16 degrees C. It **can** be used at lower temperatures but a special mix and catalyst is required.

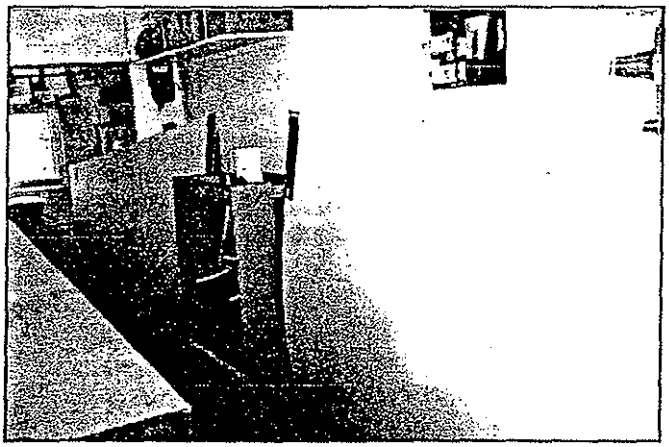
The fitting and gluing of the rib capstrips took approx. 14 man-hours; it is certainly an easy method of making ribs. Along the way I made numerous glue test pieces some of which I have been tested to destruction and some have been labeled and stored. Each evening I entering a record of the days work including the man-hours in my com-

puter and I an also taking frequent photographs and video. The Sport Aircraft Association has supplied a 20 page Construction Record Book that must also be completed as proof of work for CAA. Certification.

The reader will notice that I have started with small items, this is to gain expertise and confidence before tackling the major components. This has paid off because I was unhappy with several of the ribs and it was a simple matter to remake them, with very little material wastage, I certainly don t want to remake the mainspar!!

Looking at my diary I see that on the first of November last I began cutting the beautiful spruce for the rear spars. This necessitated the scarf joining of both the timber caps and the ply webs, which was another learning experience. A good trick when gluing and stapling the webs is to staple through packaging ribbon, this is cheap, it saves preparing the usual wooden or cardboard strips and when ripped off the staples are easy to remove without damage to the ply. Both spars were completed in 37 man-hours.

After this I was feeling confident enough to start on one of the most challenging and important components in the aircraft, the main spar. In the GP-4 this is all in one piece with laminated and tapered top & bottom caps and diagonal grain ply on the front & rear faces. First the 6 inch by 1/2 inch spruce planks provided in the kit were put on the bench inspected for defects and sorted according to length and grain. Next the scarf joints were prepared by marking then stacking the boards in a step back fashion so that several can be cut at once. The cutting was accomplished, initially with an electric hand planner then finished with an old-fashioned hand plane. These joints are then glued and clamped to the table. The spar outline is marked on the table and once the joined cap planks are set and cleaned up the laminations are set up in a series of jig blocks that are fixed to the table following the curve of the spar. The laminations are clamped to these with wooden cleats and bolts after gluing. These are quite big glue jobs and must be completed in the glue set up time available. The secret is good planning and practice at the clamping procedure before mixing the sticky stuff is advisable. After the caps are laminated they are tapered according to the plan then set up ready for the spacer blocks and webs. The whole spar took me 130 man-hours to complete an interesting and very satisfying part of the project.



Note John s neat cart to roll around his finished wing, I m sure the cart has rollers. - Spud

I now had all the components on hand to set the wing up on the worktable and had the basic structure complete by the 24 th of December, a great xmas present. The main problems encountered in setting up the wing was movement and keeping the profile correct, the only way to overcome this is to continually check measurements and angles then check them again!

Now for the final part of the summers work, building the fuel tanks. The GP-4 has a 70-litre tank in the leading edge of each wing and a further tank in the forward fuselage. All tanks are GRP and are built over molds, of course two molds are needed and these took 50 man-hours to construct. They are built up on a flat board with the same taper as the front of the main spar, several rib formers are attached to this and the profile created is covered with thin custom wood. Several coats of sander sealer give a finish suitable for the lay-up. The various plumbing fittings must be considered at this point, I turned all mine in the lathe from 50mm aluminum bar with flanges suitable for glassing in as the tanks are laid up.

A suitable fuel resistant resin must be selected and once again I found lots of differing opinions on what is best. In the end I went back to my friends at Adhesive Technologies Ltd. and on their advice chose Darakane Epoxy Vinylester 411/350.

While I have done lots of GRP lay-up work with boat materials such as chop strand mat & Polyester resin, laying up layers of thin cloth with Epoxy is a new ball game I learned the hard way! On my first attempt the resin set before I had completed the lay-up and had to be scrapped. Realizing that it was to big a job for one man I contacted John Lowther the composites expert at Safe Air Ltd who suggested the best option would be for them to do the main lay-up and then leave me to do the baffles, ends and finally the flat side. This was fairly costly but it ensured a good job and saved a lot of hassles.

When completed the tanks were glued to the front of the main spar leading edge ribs fitted then the leading edge itself. The 10mm space between the tank & the wing skin will eventually be filled with pour in polyurathane foam.

I had hoped to get the ailerons and flaps completed before the onset of

Continued on page 8

cold weather but due to distractions such as building a conservatory and a new fence this did not happen.

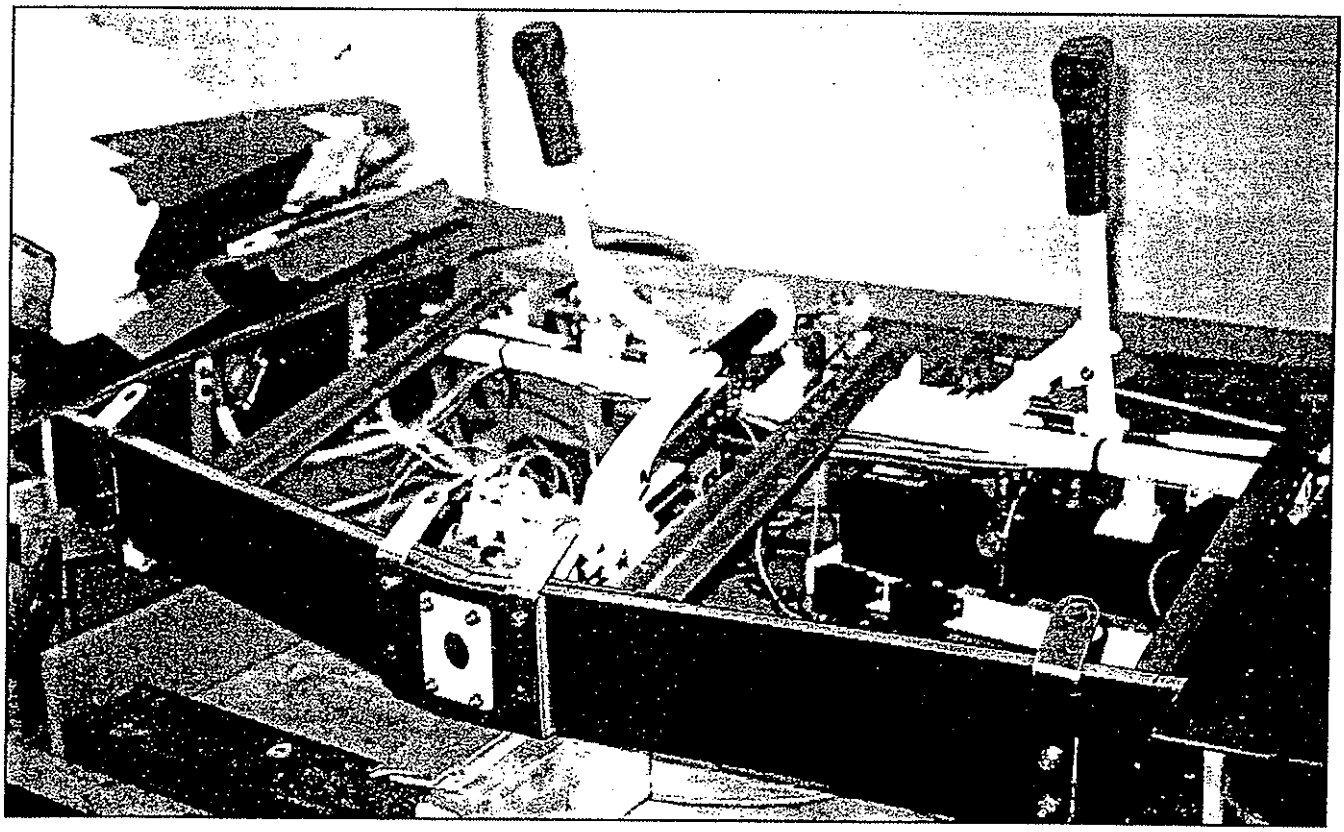
As of today the 20th of August I am 740 hours into the project, in the next part I will be working on the metal components.

BUILDING THE GP-4

Part 3

By J.P. Evans

In Part 2 of the series on Building the Osprey GP-4 I took you through last summer with the building of the wing structure. By April the weather was getting to cold for gluing without the use of a lot of heating so I decided to start on the dozens of metal components anticipating that these would keep me busy through the winter. It is now November and approx. 700 man-hours later I am still working on them!! I have been endeavoring to work a seven or eight hour day six days a week on the project and so far have produced about eighty separate items some in aluminum and some in 4130 steel. I began in April on the aileron hinges and clevis brackets which are made from 6061-T6 aluminum angle and channel and all have nut plates behind them as well as bronze hinge pin bushes so in these alone we have 24 components. I then worked through the flap hinge assemblies and stop blocks etc. In May I built the equipment needed to carry out the steel work namely a metal top welding table, metal bending break, a sandblast cabinet and a mobile stand for the TIG welder and Argon cylinder. This all took about three weeks and has proved to be well worth the effort. I ll digress a little here and describe the sandblast cabinet as it was simple to build and is great for cleaning up after welding & prior to painting. Of course one needs an air compressor, mine has 12 cubic feet capacity which is just adequate, 15 cubic feet would be better. The gun and suction hose can be purchased for around $15 at any tool supply shop. I made the cabinet big enough to take the GP-4 undercarriage legs which worked out to be 900mm long by 600mm high by 600mm wide welded an angle iron frame and used 9mm construction ply for the sides, top and bottom. The bottom was made like an inverted pyramid with the sides held together with some strips of glass cloth & resin, a plastic downpipe fitting was glassed into the center to catch the sand picked up a piece of steel mesh at a local junk yard where I also found a piece of plate glass 450 x 200 for the viewing panel. The hand holes are 200mm in diameter and lead into a pair of industrial gloves with material sleeves sown on to them. One end of the cabinet is hinged for access with rubber door seals fitted to prevent leakage. Another downpipe fitting was glued into the top for a vent, which in my case is piped outside through the workshop wall. The only other item required is a light which needs to be protected from dust and damage, mine is made from a 1 litre thinners tin with the bottom cut out which is glassed into a hole in the top of the cabinet. A standard light fitting is fitted into the screw top of the can with one or two vent holes punched around it and a piece of perspex is screwed across the opening inside the cabinet. I am using garnet sand, which I purchased from a commercial sandblaster, however other mediums such as glass beads can be used. Now back to the real work! Early



June found me cutting and bending steel, working on flap & aileron control bellcranks, elevator horn plates, gear truss brackets and seat rail attachment brackets to name a few. Each component presents its own problems and in many cases it is necessary to think long and hard on the best method of manufacture and often-special tools and jigs must be made. I am finding the process totally absorbing and experience a great feeling of achievement as each component is completed can t say that everything goes according to plan all the time and on several occasions I have consigned parts to the scrap bin and started again. This is when I need Mick Branigan s Buggar Board. This is a large wooden board with the word Buggar engraved on it which is to be hang around the neck for awhile when a cockup occurs!! The GP-4 has either a manual-retracting undercarriage operated by a lever similar to the Mooney or a new electro hydraulic system. I have chosen to go with the latter as while largely unproven it looks a better system so I have taken the plunge purchased the extra ten sheets of plans. Whichever system is chosen there are a lot of metal parts to make so I started on some of these during June and July. In July also I finally, after a lot of delay managed to get a local tutor to give me some TIG welding instruction have done ordinary stick welding in the past and also a little Oxy. Acetylene but TIG was a new game In the first lesson I was taught how to setup the equipment and do a straight weld seam, then it was home to practice. I had two more lessons where I leant the fundamentals of welding 4130 sheet and tube and after quite a few hours of practice felt confident enough to try some of the more simple joints on the fittings. After each part is welded I stress relieve it by heating to red heat with a gas torch and allowing it to cool slowly, after this the part is sandblasted and coated with PA10 metal primer ready for painting with epoxy paint. During August Hugh Tapper a GP-4 builder from Invercargill came for a twenty four hour visit and brought me a set of engine cowls he had imported from the States, in return he went home with a hydraulic pump and my tank molds. By the 10th of October, the first anniversary of the project start, I had put in a total of 980 hours and had completed the majority of the metal components. A further consignment of the material kit arrived from Wick s Aircraft Supply, which contained the wheels & brakes, navigation lights, pitot head, fuel cock and all the control rod ends etc. About the beginning of October I started setting up the main undercarriage legs and as I write this I am still working on them. I first tack welded the legs together then began the set up. I found a lot of the plan measurements served as a guide only and getting all the angles and lengths of the components correct so that the things work has proved to be a major undertaking. Lots of trial and error and for a time more error than trial!! However the problems have all proved to be surmountable so far and it really looks as if it will work. I have just completed the final welding of the trusses and now have items such as door mechanisms, up locks and micro switches to fit. To keep my interest up and gain useful information I subscribe to the GP-4 Builders and Flyers Newsletter which comes out bimonthly and has a section written by the designer in which he promulgates any plan changes and gives building tips etc. An email chat group has also been established which is proving to be most interesting, builders and flyers from all over the world are coming up on it telling of problems they have encountered and methods they have devised to overcome them.

To be continued....

Kind Regards,

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Editor s Corner

New GP-4 discussion group, actually Two!

There is a new Internet discussion group on the GP-4. You can find it at: http://groups.yahoo.com/groups/gp4/ There isn t a lot of traffic yet, as most of the builders are not aware of the group. You ll find it very handy when one has a quick question. We will try to keep a recap of the technical discussions and re-print them in the newsletter.

Also at the Osprey Aircraft website there is now also a discussion section for the GP-4 and Osprey II. The web address is: www.ospreyaircraft.com then click on the discussion tab.

The newsletters late, like usual!

I apologize for this newsletter being so incredibly tardy. When it get past Labor Day I become a Traveling Fool for work through the middle of December. I talked to one of the builders last month and I was apologizing for being late on the newsletter and his comment was Spud, if it was on time, then we would think something was wrong .....

Still searching....

We re still hoping to find a new publisher and editor for the newsletter. I surely hope someone will step forward as we only have one more issue to fulfill for the year 2001.

Very Best Regards,
Spud Spornitz In Chilly Kansas

REAR GEAR TRUSS CLEVIS MOUNTING

Rear Gear Truss Clevis Mounting Revision
Submitted by Jim Simmons, Plans #366, of Cheshire, CT

I recently visited with Ernie Holmes, the builder and owner of a GP-4 in Orange, Massachusetts. Ernie has had the need to remove his landing gear on multiple occasions and offered the following suggestion to facilitate a much easier removal if it is required.

Plans drawing 32 illustrates the mounting of the REAR GEAR TRUSS CLEVIS as having the bolts going the front of the rear spar, through the spar, to an anchor plate mounted on the rear face of the rear spar. These two bolts are next to impossible to remove once the wing is completed.

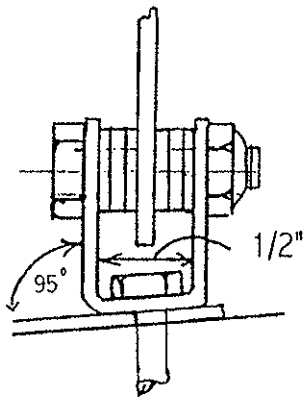
Ernie s suggestion is to rivet two 10-32 anchor nuts to the inside of the clevis This will allow the AN3-17A bolts to be inserted from the rear face of the spar. An AN970-3 washer is inserted under the head of these bolts to create a larger bearing surface on the rear spar.

I ve sent a copy of illustartion to George Pereira to make sure he didn t have an issue with this suggested revision and he is OK with it. It look great to me.

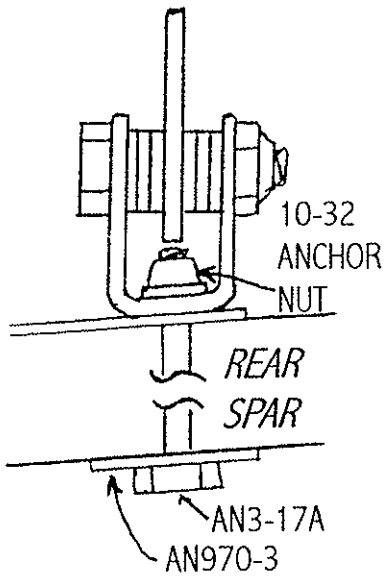
Happy GP4 Building,
Jim Simmons
295 Contour Drive
Cheshire, CT 06410
Phone: (203) 272-9346 E-mail:
jsimmons619@aol.com

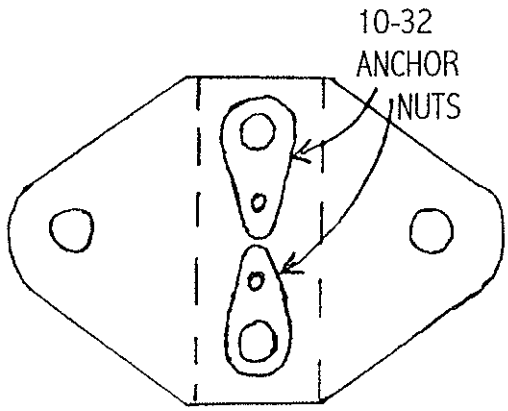
Illustration below

ORIGINAL DRAWING:



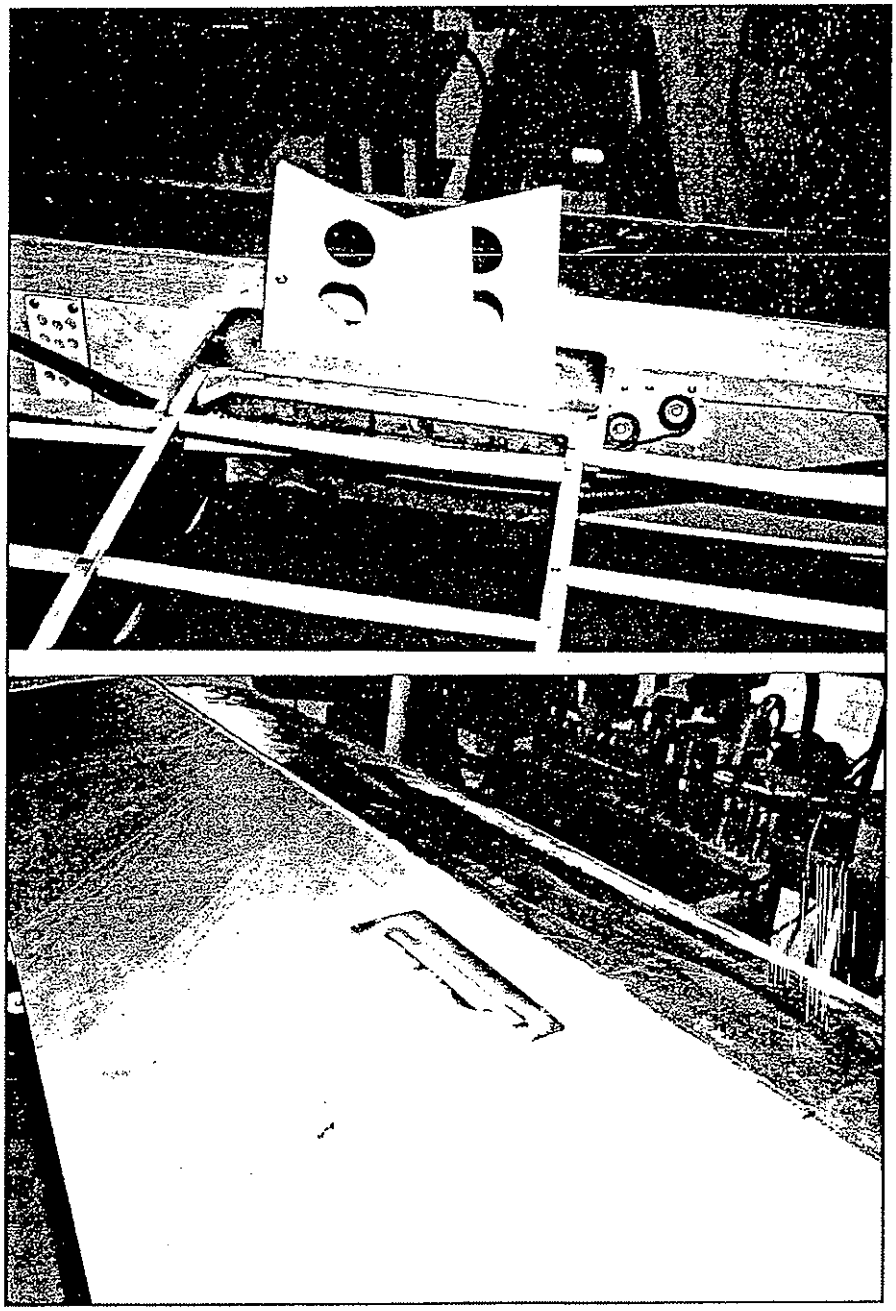
SUGGESTED REVISION:





Happy GP-4 building!

Jim Simmons, Cheshire, CT



Lynn Sheets Air Brake System

Hi GP-4 Builders.

Here are some pictures of my spoilers that I installed in the wing. The spoilers came out of a salvage yard. They came out of a 201 Mooney. To install them you have to cut the cap strip on one side of the wing. And reinstall the strip on the other side of the rib. I made the cap strip 1/2 by 1/2 so I could install threaded studs in them. I also installed a fiberglass housing for them to fit into with a drain tube at the bottom and ran it out the bottom of the skin. Because the spoilers are not water tight. I also fiberglass the housing to the ribs and main spar. And put wood brace at the bottom of the housing. I made the top plate of the spoiler larger to catch the main spar and the outside frame. I ran 1/8 inch brass tubes threw the top of each rib and ran 1/16 inch cable thru the tube for guide, works very well. The cables meet at the center of the main spar where I put double pulleys and ran the cable around the pulleys to the center of the console which hook up to the lever with an arm thru the top of the console so I can work them manual. If and one needs more details they can E-mail me. I have got my wing fiberglass and working on the canopy. The fuselage and the wing should be hook up together for making the fillets. And put my last layer of fiberglass on it. And in the process of permanently mounting the speed brakes and lenses.

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Plans Correction

Hi Spud and builders, Please publish this information in the next newsletter, I ve reviewed this correction with George and he has approved it.

Jim Simmons
Cheshire, CT

Plans Correction:

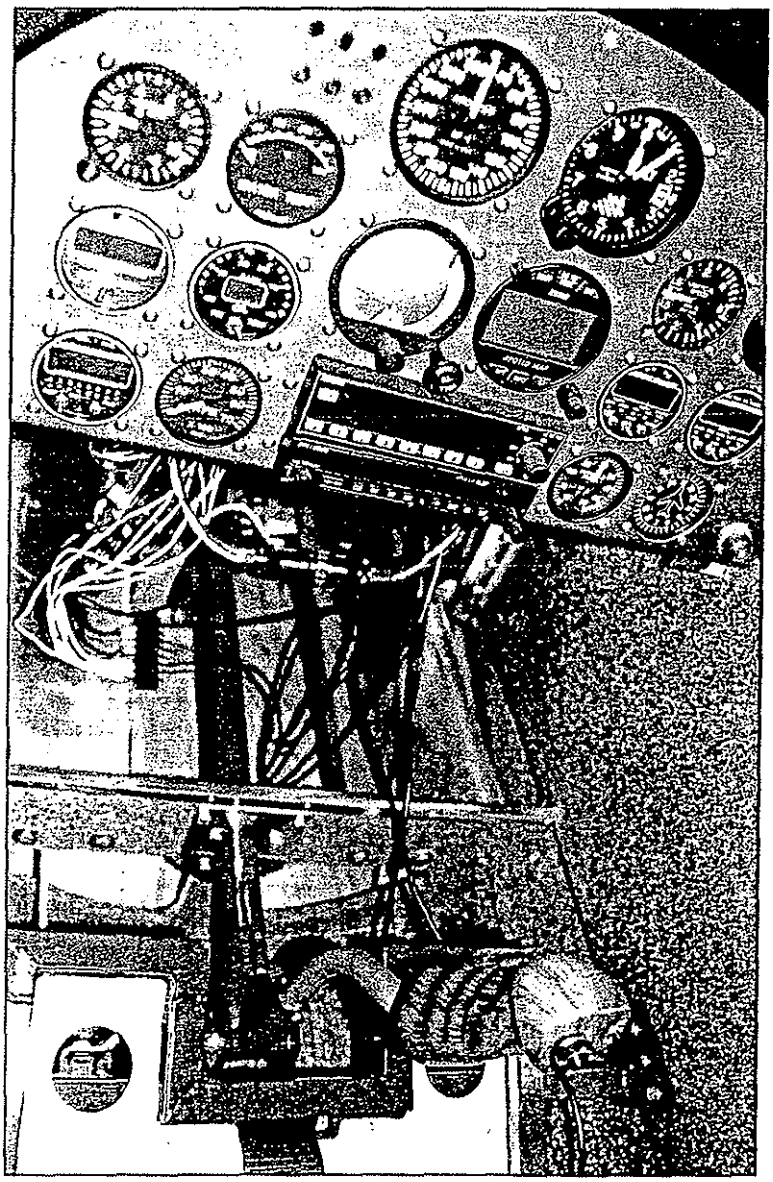
Drawing #39 indicates using machine screws, part number **MS24694-S60** for spar attach fittings. This is incorrect and machine screws, part number **MS24694-S65** are required. Please be sure to update your plans accordingly.

GEORGE S CORNER

Fellow GP-4 builders,

Some of you have expressed an interest in the GP-5, (see Vol. 14). After a very twisted journey of different owners, money shortage, you name it: It came to rest back here in Sacramento by a new and dedicated owner named George Backovitch.

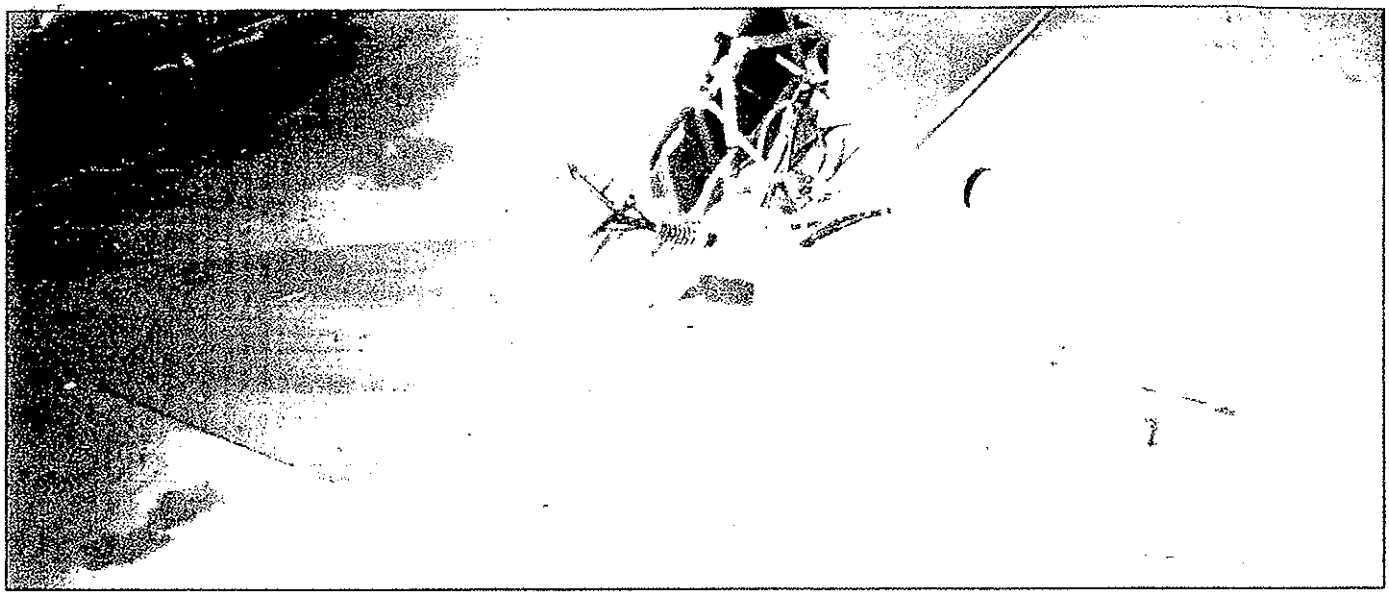
The GP-5 was about two weeks from taxi tests. While sitting in a large hanger, a man working on a vintage Thunderbird car somehow let the car slip into gear. It sped across the hanger, cutting the GP-5 in half, between the canopy and tail area. George B. called me and I went to see the wreckage and I began to wonder if someone out there is trying to tell me something!

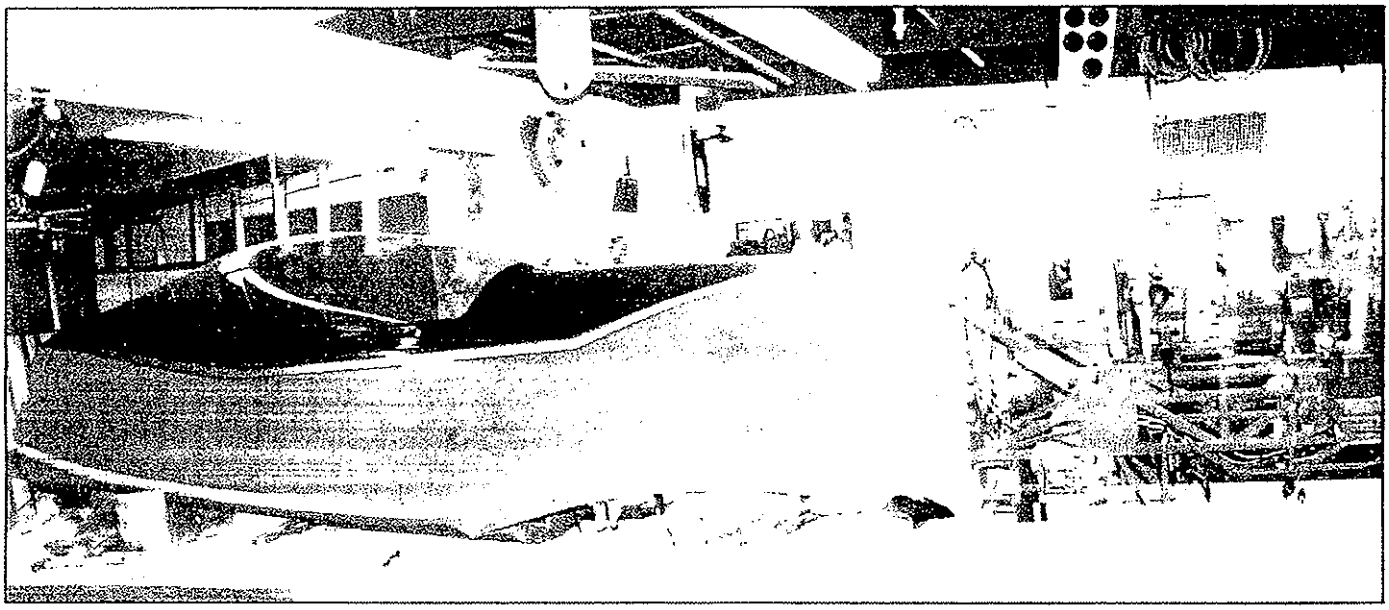


Since I have the few drawings available and have lousy judgement; it s back in my shop for possible repair. - Maybe! I will keep Spud posted on any progress for the newsletter.

I want to congratulate Ernie Holmes on his GP-4 conversion from manual gear retraction to hydraulic. It seems to have solved his major problems. I haven t recommended the conversion because none of the retraction components, gear trunions and link trunions, fit in the manual locations. You can t drill new holes in the spar for new through-spar bolts because of the L.E. fuel tanks. Pat Salamonde solved the problem by bolting on a large spar plate, using the manual gear bolt pattern for the hydraulic gear components on the large spar plate. Thanks for the perseverance of these guys, it is now possible to convert a manual gear to a hydraulic gear in a completed GP-4.

If you are at a stage where your tanks are in but your wing is still uncovered, you could fairly easily use the larger spar plate and convert to the hydraulic gear. I will try to help any of you builders, if I can, with a





conversion.

I thought the foam and crock pot article by Jim Simmons was a great idea. With the colder weather coming on, you should pre heat the two part polyurethane foam before mixing. You also need a nice warm shop. It is important to mix and stir the two parts well and pour into the cavity before it starts to expand. If it is not totally mixed or cold you could get some un expanded areas. Once you glass over these areas and get it into a hot environment, it could expand and bulge out a bubble. I recommend heating the shaped foam with a heat lamp before covering. This will help expand the foam if there is a problem area.

When foaming over the L.E. wing tanks, it is important to fair in the spar and ribs before pouring the foam. This will ensure that a flat surface of foam and rib height at each bay. When you glue the wing skins to the spars, ribs and foam, I like to use slurry of micro-balloons with the T-88 adhesive over the foam areas. This will give you a better bond to the foam and save some weight as well. The same idea is used when laying up fiber glass over your foam fillets. Squeeze on a slurry of resin and micro-balloons to the foam before laying up the glass. It makes a better bond and the light micro slurry saves weight. I found that two ply of 6 oz. cloth was adequate for the fillets. If you haven t worked with fiber glass much, a good source of information if anyone building a Vari-EZ or a Long-EZ.

Regards to all,

George

Do AD s Apply to Experimentals?

itors note: With many FARS there is going debate about how to interpret :m. Such is the case with re- to ether Airworthiness Directives apply engines or props of Experimental craft. The following article appeared the summer issue of the newsletter blished by the Portland FSDO, and ovides our b- FSDO s point of view..

iintenance Update
r Gordon Reade,
ortland FSDO

Airworthiness Directives (AD s) ply to certificated Engines, opellers, or parts installed on Amateur ilt aircraft? This is a question that has en bantered about for as long as I can nember. Every time we think it is iled down, someone writes an article it causes doubt to resurface.

e Experimental Aircraft Association s b site (www.safetydatacom) recently blished an article by Ron Alexander ay 1997 Sport Aviation), in which .Alexander states The FAA has fur- er qualified Airworthiness directives as ey apply to amateur-built airplanes. worthiness Directives cannot apply to y part of an amateur-built airplane less that airplane is cited along with io should do the work and to what indards. On the same *safetydata* b site, EAA states Amateur-built air- aft do not have to comply with AD s, wever, if you are using a certificated gine, propeller, or component and u wish to maintain that certification,) s must be complied with. It is per- ssible to mark the product data plate being Experimental so as to elimi- te the requirement to comply with the)

ere is FAAs legal position based on e FARs and a task force report. AD s e not issued against amateur-aircraft.) s issued against certified engines, ops, and appliances are required. nateur-built operating limitations quire compliance with FAR 91. FAR irt 91.403 requires compliance with irt 39 (AD s). FAR 39.3 states No person shall operate a <u>product</u> to which an AD applies except in accordance with the requirements of that AD. FAR 39.1 defines <u>a product</u>, or for the purpose of AD s, as an aircraft, engine, prop, <u>or appliance</u>. Advisory Circular (AC) 39-7C further supports this position. It states that AD s do apply to aircraft in the experimental category... at least as it applies to parts installed.

What products or appliances may be eligible for an AD? Briefly, if a product has an FAA approved parts tag or data plate, an AD issued against it would apply. This is regardless of whether the part has been modified, altered or repaired in the area subject to the AD.

The EAA says you may mark the product data plate as being treated as experimental. FAR 45, however, prohibits the removal, modification, or installation of any aircraft or certified engine/propeller data plate without approval from the Administrator (FAA). The FSDO is prepared to issue written approval for any amateur builder who wishes to remove/change an aircraft, engine, or propeller data plate. If an amateur builder ***legally*** changes the data plate to make it his or her own part, the AD will no longer apply. FAR 45 does not prohibit modification of appliance tags by an amateur builder. Always remember that AD s are only issued when an unsafe condition exists. The FAA and EAA both agree that it s prudent to comply with an AD for safety reasons. Failure to comply with Airworthiness Directives could put you your passengers, and the public at risk.

The above was supplied from the RVator RV builders newsletter. We appreciate them allowing us to share it with our group - Spud

Traud s Canopy Installation - Part #2 continued from page 5

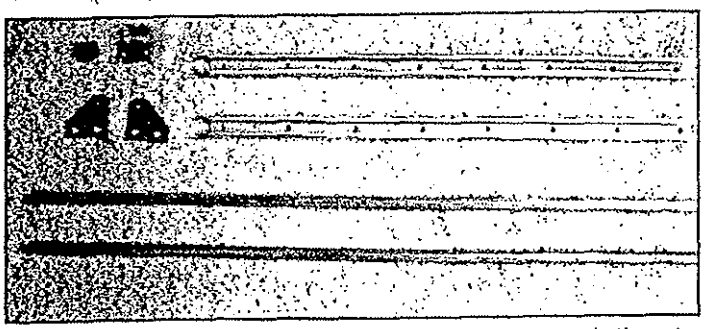
The difference is about 2 degrees and not noticeable. Where this can become a problem is at the canopy windshield juncture as described above. Take your time to fit the canopy glass on the fuselage. Use a template to simulate the windshield glass and check everything over before the glass is final trimmed and drilled. Look at edge distances along the canopy sill, look at the transition of the glass on the aft portions of the fuselage - really look the whole thing over before you are completely satisfied - then trim and drill.

The process of trimming and drilling the canopy glass is completely detailed on Dwg. #47, lower left side of the page. George spells out in detail the procedures to follow to get the canopy drilled properly and mounted to the inside canopy skirt, as well as fabricating the outside canopy skirt. It is important to note that you must use a Plexiglas drill bit to drill the canopy glass or you risk cracks. A good idea here is to have on hand various sizes of Plexiglas bits up to the largest hole you will be drilling which is 3/8 . Once the canopy glass is pilot drilled onto the inside canopy skirt, final trimming can occur. Final drilling of the canopy glass follows this. The steps detailed in Dwg. #47 spell it all out such that it would be redundant to repeat them here.

The next discussion on canopy fabrication will focus on the outside canopy skirt, checking the canopy for proper sliding and blending in the structure to yield a very nice transition to the fuselage. Please don t hesitate to call me with any questions, comments or concerns regarding the canopy or any other aspect of the GP-4.

The Classifieds

For Sale: **Stainless Steel canopy hardware kit.** The components include: Stainless steel canopy side rails, stainless steel canopy slide rods, 4130 steel brackets for side rail bearing mounts, and the bearings. Call for pricing. Mike Traud,11907 Prospect Hill Drive, Gold River, CA 95670 (916)635-1147



GP-4 Project For Sale: I am unable to get enough time to complete this project so I am offering it for sale. I have the complete wood materials package, both spruce & plywood, some metal and hardware, original plans and an extra set of shop drawings, builders manual and 6 years of newsletters. I am well into what many feel is the most difficult part of construction that being the wing. I have receipts for over $6,600 in materials and a schedule documenting 738 hours of labor to date. I will donate all my labor to someone that is interested in continuing on with this project. I want $6,000 to cover most of my materials costs and you can pick it up in Southern California. Call me for detailed information Cliff Thompson (760) 244-7969 or email at femacliff@hotmail.net.

For Sale: New Hydraulic Gear Plans Upgrade. Convert your GP-4 manual landing gear system to hydraulic - electric system. Complete with emergency back up system. (Note: System must be installed prior to wing skinning!, no retro-fits) Complete print package for $150.00 Mail your checks to: George Pereira 3741 El Ricon Way, Sacramento, California 95864 phone (916) 483-3004 Fax (916)978-9813 E-mail GP-4@juno.com

For Sale: Pre-fabricated composite components for GP-4. Cowling , exhaust blisters, inlet ramps, tailcone . Complete four-piece package. Call or E-mail for current pricing. Shipment will be sent Freight Collect - Jake Jackson - Rio Linda, CA (916) 992-0608 E-mail J7200@aol.com

Back Issues: We have all of the GP-4 back issues (#1 thru #35) available for $3.00 each. Mail your checks to: Bill Spornitz - 1112 East Layton Drive - Olathe, KS 66061-2936, Ph(913)764-5118 or bspornitz@aol.com

Wanted: Looking for a GP-4 project that is well under way through close to being finished . Will consider all projects. Contact me at (503) 646-5276 or by mail at Edward Mitchell, 13835 S.W. Devonshire, Beaverton, OR 97005

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New ***E-MAIL bspornitz@aol.com***

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The Aviation Dictionary

Airspeed - Speed of an airplane. Deduct 25% when listening to an Air Force pilot.

Bank - The folks who hold the lien on most pilots cars.

Carburetor Icing - A phenomenon that happens to Aero club pilots at exactly the same time they run out of gas.

Cone of Confusion - An area about the size of New Jersey, located near the final approach beacon at an airport.

Crab - The squadron Ops Officer.

Dead Reckoning - You reckon correctly, or you are.

Engine Failure - A condition which occurs when all fuel tanks mysteriously become filled with air.

Firewall - Section of the aircraft specially designed to let heat and smoke enter the cockpit.

Glide Distance - Half the distance from an airplane to the nearest emergency landing field.

Hydroplane - An airplane designed to land on a wet runway, 20,000 feet long.

IFR - A method of flying by needle and ripcord.

Lean Mixture - Nonalcoholic beer.

Nanosecond - Time delay built into the stall warning system.

To be continued

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