experimental aircraft association

THE LEADING EDGE

NEWSLETTER OF MUROC EAA CHAPTER 1000

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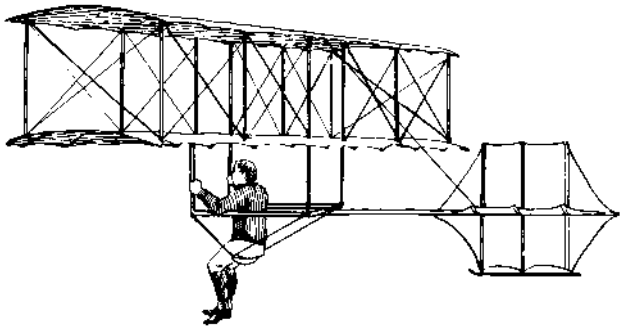
http://www.eaa1000.av.org *June 1997*

Chapter 1000 meets monthly on the third Tuesday of the month in the USAF Test Pilot School Scobee Auditorium, Edwards AFB, CA at 1700 or 5:00 PM, whichever you prefer. Any changes of meeting venue will be announced in the newsletter. Offer void where prohibited. Your mileage may vary. Open to military and civilian alike.

This Month's Meeting:



Antique Gliders
Speaker: Jeff Byard
Tuesday, 17 June 1997
1700 hrs (5:00 PM Civilian Time)
USAF Test Pilot School Auditorium
Edwards AFB, CA

Before Orville and Wilbur soared above the dunes at Kitty Hawk they soared above the hills around Dayton in gliders. While the 1903 Flyer was significant, the basic aerodynamic work that facilitated it's success came from countless flights in sub- and full-scale primary gliders. This month we will hear from one of the country's leading experts on antique gliders, their history, and reconstruction. Jeff Byard flies the "big iron" to put food on the table, but his passion is collecting and restoring pieces of aviation history. His collection of vintage gliders rivals that of any museum in America---and they're all flying! Jeff will tell us the story of a particularly significant restoration illustrated by a slide presentation and his enthusiasm for this fascinating aspect of aviation. See you there!

(P.S. Hope everyone has recovered from the ***PPTAF*** "Blue Flu".)

PPTAF STRICKEN BY MYSTERIOUS DISEASE:

See Page 2 for details

Chapter 1000/49 Fly-In: The Greatest Party West of Greenwich

Another Resounding Success for the Sixth Annual Scotty Horowitz Going Away Fly-In

Rosamond Skypark was a-hoppin' on 17 May 1997, just like we said it would be. One Fly-In participant knew nothing about it beforehand--he had been at the Kern County Library in Rosamond and noticed that there was far more activity over at the Skypark than he'd seen in a long time. He came over to see what was going on and stayed for the party!

Of course, the Fly-In itself started long before 17 May. **Ron Applegate** was the primary coordinator who ramrodded the whole effort. He was ably assisted by Chapter 1000's own mistress of the culinary arts **Glenna Wagner** who planned the most important part of the Fly-In: the food! **Doug Triplat** coordinated Chapter 49's participation by planning the Pancake Breakfast.

The field was wonderfully prepared by the new FBO owner **Olaf Landsgaard** who generously donated use of the former Aronson's hangar. Numerous folks showed up promptly at 1600 the night before to assist with the setup, including **Quentin Toyloy** and **Terry Pierce**.

Meanwhile, in North Edwards, **Charlie Wagner, Glenna Wagner, Bill Grahn, Mike Pelletier,** and **Russ Erb** prepared yet another Chapter 1000 project for its first flight. **Norm Howell**, our chapter Flight Advisor, was not consulted, since a) he was in France on a TPS boondoggle at the time, and b) the objective of this test was to ensure that the project did NOT get off the ground. The project in question was our new Chapter 1000 Booth, whose construction was detailed in the last newsletter. The pieces-parts of the booth were loaded onto a purpose-built A-frame transportation and storage structure which had been loaded in the back of Charlie's pickup. It looked as though it should have a political campaign ad written on the side.

Russ drove on ahead to the Skypark to raise the flag pole such that Old Glory could hang limp in the dead calm of the next day (great weather for flying, not all that great for flag flapping). The flag pole was constructed of parts Russ had recently purchased for the purpose of erecting a fence in his back yard.

Charlie set out for the first non-flight of the booth, successfully transporting it to the Skypark. Mike Pelletier flew safety chase and submitted a detailed report on the flying qualities of the booth. By the time the booth arrived, most of the other set-up was complete, so many of the Chapter 49 members present were ooh-ing and aah-ing as the booth was removed from the truck and quickly assembled. What they beheld was the most Over-Designed, Over-Engineered, and Best Booth in all of EAA (We wouldn't have it any other way--look at it closely at the next Fly-In and see the great job **Charlie Wagner** did designing it.)

On Saturday morning the first of the crew arrived at 0700 for the final preparations. The Spot Landing Contest line was carefully laid out by stretching white duct tape across the runway. **Dave Burdette** led the team judging the contest. The ***Project Police*** reviewed the scoring and watched the videotape evidence over and over (especially the funny parts) and finally agreed on the winner. However, due to the tangled morass that is the ***Project Police*** hierarchy and a bureaucratic SNAFU, the results of the contest are still **CLASSIFIED**, to be released at an appropriate future date.

The morning started out with aircraft arriving from everywhere, including Hanford, Camarillo, Redlands, Sierra Skypark, Tehachapi, and more. Members from EAA Chapter 376 (Fresno, CA) were seen flaunting their chapter T-shirts and taunting the ***Project Police*** to inspect their aircraft. (*We did--they were deemed at least airworthy and suitable for the* ***Project Police*** *to be seen in. If they'd offered us rides we probably would have been forced to admit that they were quite excellent, but they didn't, so we don't have to...)* No Chapter 1 members were seen, since apparently their idea of a Poker Run only involves airports with overlapping patterns. That's okay, Jan--we'll still be back to raid your place next year. **Doug Triplat** of Chapter 49 was the parking meister, cruising the ramp with his way-cool headset and radio.

I tried to break away from the Young Eagles Flight Rally to get some breakfast from Chapter 49, but the line was stretched clear across the apron. It must have been good, but you'll have to read their newsletter to find out. Also helping on the ground with the Young Eagles were **Dave McAllister, Chris Barrett, Michelle Holtzman,** and **Patricia Liefeld**. We flew 49 of the planned 25 Young Eagles, and got all of the paperwork done in spite of a major meltdown in the printing system caused by not properly FCF'ing the computer after a change of operating system. 49 Young Eagles--a coincidence? Maybe, but a lot less work than flying *1000*! Read the Young Eagles report for more info.

The whole atmosphere was a wonderful blend of confusion and excitement, with too much going on to be able to take it all in. Joyce Mills and Don Alderson led some wonderful formation fly-bys of T-34s. A lesson in contrast was seen as Lyle Trusty screamed over the runway on a high-speed pass in his T-18, followed by an ultralight going so slow it looked like it should fall out of the air. The local 99s even squeezed in a meeting during the Fly-In.

Shortly before 1100 the grill arrived and Chris Barrett did his antithesis of Frankenstein's monster impression (Umm...Fire Good!!!) Soon Chris and Ron Applegate were cooking up a storm of Polish Sausages, ***Project Police*** Burgers, and some wonderful Tri-Tip. **Chuck Firth** was able to make it to the Fly-In and stood next to the grill with spatula in hand giving Chris pointers on how to cook. Of course, Chris wisely ignored him, and Chuck *almost* had us convinced he was doing something. Ron had planned for 116 meals, and after the smoke cleared the Tri-Tip had disappeared like dry ice in an autoclave, the Polish Sausages were gone, and maybe 12 burgers were left. Because of the perfect planning, the post-Fly-In leftover cookout was canceled.

Flying continued into the afternoon. **Scott Liefeld** twisted my arm into taking an open-cockpit ride in his Pietenpol (it didn't take much twisting). **Jon Sharp** showed up with **Steve Erickson** in Steve's biplane. They would have flown the *Storch* but they couldn't leave until Saturday morning and wanted to get there before everything was over. (*Steve showed the Storch at last month's Chapter 49 meeting. This ain't no replica, folks--it's the real thing. My first impression--that thing is HUGE! I thought a Bearhawk would be big...and the Storch only seats two!)*

About 1330 we'd had about all the fun we could stand in one day, and the area was rapidly and methodically dismantled and cleaned up. What a great party! If you were there and I missed your name--sorry about that. Come to the June meeting and publicly dis me in front of everyone. It wouldn't be the first time.

Mark your calendars for next May--we'll be having the Seventh Annual Scotty Horowitz Going Away Fly-In!

- Russ Erb

PPTAF STRICKEN BY MYSTERIOUS DISEASE

EDWARDS AFB, 20 MAY 97. (***PPNS***) ***Project Police Tactical Assault Force*** leaders reported today that large numbers of the crack Chapter 1000 assault troops have apparently succumbed to an unknown malaise that prevented them from attending the scheduled Operation "**Allison in Wonderland**".

Recently declassified documents revealed that the aforementioned assault was to take place in the mountain community of Tehachapi (an Indian word meaning "land to which EAA members won't drive"). ***PPTAF*** Commander **M. Pelletier** could not be reached for comment (another victim?) but raid on-scene commander **Gary Aldrich** said, "Details are sketchy, but an outbreak of a hideous disease is the only plausible explanation for the dismal turnout for this exciting and challenging mission. My heart goes out to our unfortunate troopers that are waging what may be their final battle." The ***PPTAF*** order of battle and casualty list remains **CLASSIFIED**, but Aldrich did admit that attendance was so low that "even the ***Project Police Paddywagon*** was sidelined." Aldrich went on to express concern that future mission readiness may well be impacted unless the strong-

hearted warriors rebound and fill in the ranks for next month's detail.

(*Preliminary reports from the Pentagon deny the existence of such an affliction. Processing on all claims has been halted until another several billion dollars can be duped out of Congress for a "study."*)

Last Month's Meeting

EAA Chapter 1000
Vintage V-12's, Tehachapi, CA
1800; May 20, 1997
Gary Aldrich, presiding

A small but, valiant band of ***PPTAF*** raiders tackled a journey of Homeric proportion last month when they traveled to a hidden location in the Tehachapi valley to visit Vintage V-12's. Following cryptic instructions such as "turn in by the red truck", our heroes discovered an engine overhaul shop....Ah, but not just any engine! Vintage V-12's specializes in, you guessed it, overhauling aircraft engines from the golden era of internal combustion development.

The shop and warehouse were stacked floor to ceiling, literally, with Merlin, Allison, Griffin, and Daimler-Benz V-12's as well as the odd-looking Bristol Centaurus radial engine. Owner **Mike Nixon** and his lovely wife **Kim** started their unique business (one of only a half dozen or so in the U.S.) in 1974 after Mike discovered his love of the old engines. They've been located in Tehachapi since 1986.

Kim was our hostess for the tour and provided fascinating insight into the history of some of the motors while lead mechanic **Jose Flores** provided the technical commentary on the overhaul process. We learned that when a "core" comes in from a customer a teardown and inspection takes place to determine the tasks required to bring it back to spec performance. Kim said that most of the engines are removed from flying aircraft but some--like the Daimler-Benz Me-109 engine currently in work--come from wrecks or storage in the fabled "barn full of airplanes". Some have famous owners. Examples are the Allison belonging to former Astronaut **Frank Borman** and the Merlin out of **Bob Hoover**'s famous P-51.

An interesting difference in basic design between these V-12's and the engines we typically find in our cars (other than the obvious difference in number of cylinders) is that the pistons do not ride directly in the block, but are in separate, removable cylinder liners. Not only would this reduce the required accuracy in casting the blocks and the requisite honing, but it probably made it much easier to overhaul the cylinders (easy fix for cylinders worn past oversize limits).

Jose told us that after one of their overhauls, an owner using careful maintenance should expect up to 800 hours of faithful service. This is significantly greater than the "factory" wartime TBO of 500 hours...and especially good, considering that most cores are pushing 50 years old and were only intended to last the short span of the War. Interestingly, it also takes 800 hours of labor to overhaul the engines...sort of a 1-to-1 thing going here.

When we asked about the availability of parts for these old war-horses, both Kim and Jose indicated that it's really no problem. Some parts, like pistons, are now back in limited production. Others, if not available, can be specially cast or machined by some shops. That is the method Mike will use to resurrect the Daimler-Benz. This engine suffered massive corrosion damage to the large number of magnesium parts. New parts will be cast, using parts from similar engines as molds. In a year or so, it should be flying in the only original Me-109 in the world...and we got to touch it!

For their more common parts needs, they only need to stroll out the back door to the warehouse which contains a veritable treasure trove of complete engines, cores, and miscellaneous parts. We saw complete Allisons, covered in the original cosmolene and stacked on shelves. There were several cores for the massive sleeve-valve Bristol Centaurus engine that powers the Hawker Sea Fury. We even found out what a "sleeve-valve" is! All present agreed that the Centaurus would be the perfect engine for a **Berkut**, once the cowling, prop clearance, weight and balance, and fuel capacity problems were addressed.

So, if you are ready to have that ol' Merlin redone, how much do you make out the check for? Kim said that the price is really reasonable, considering that the general aviation industry rule of thumb is that the engine overhaul should cost about 25% of the total cost of the airplane. For only $50,000 or so, you can make your core engine pump out it's original 1650 horsepower. Considering that your typical flying P-51 goes for far more than $200,000, it really is a bargain (if anything costing $50,000 can be called a "bargain").

Mike was once asked if they sell overhaul "kits". He said, "Yes, of course, the price is the same...$50,000." Judging by the number of engines crammed into the shop, there is no shortage of customers with the "scratch" to have the job done right--by the professionals at Vintage V-12's.

After prying **Ron Applegate** away from Jose and the warehouse (Ron's thinking of swapping the 140's Continental for one Mike's Allisons), we found our way to Domingo's Mexican Restaurant. We persuaded Kim to join us...which was a clever ruse, since none of us could find it ourselves. Domingo's has, to quote Ron, "some dishes I haven't seen since I left Mexico." (I, at least, was surprised to learn of Ron's Hispanic heritage--Applegate must be his married name.) At any rate, lively conversation (aviation and otherwise) continued as we consumed mass quantities of chips and salsa while waiting (interminably) to be served our delicious meals. This place may earn honorable mention in the ***PPTAF*** High-Fructose Reconnaissance Manual; if you aren't on a tight schedule. The "meeting" adjourned after a moment of silent contemplation of our stricken comrades who were forced to miss the event.

For Mike Pelletier's sake...No, we didn't read the minutes (the Secretary was among the missing), and no, we didn't cover the business items (because the crowd was virtually the same as at the board meeting),...Sorry.

- Gary Aldrich

President's Two Cents

Just a short note this month to say thank you to several members for making the annual Chapter 49/1000 **Scotty Horowitz** yada yada yada a success. I'd like to extend my appreciation to **Charlie Wagner**, **Bill Grahn**, and **Russ Erb** for their assistance in getting our new booth transported from Charlie's place and set up at Rosamond. The booth looked great and served as a base of operations for selling tickets and displaying EAA literature. I got a chance to sign up a new national EAA member and at the same time learn how to speak the alphabet using sign language.

The second thank you goes out to **Ron Applegate** and **Glenna Wagner** for making the event a reality. Ron was the one to pull the whole event together. He worked closely with the airport manager at Rosamond to ensure we had a nice place to have the fly-in, all the necessary equipment was in place to cook lunch, and the airplanes that came in had a place to park. Ron was also one of the guys cooking up that tasty Tri-Tip. Glenna, as usual, made sure there was plenty of food, desserts, and drinks for all the hungry attendees. If you ate lunch at the fly-in it was due to her efforts, 'cause she was the one who brought the vittles! I know there were other people who helped out during the fly-in and I'm grateful for their help as well. It takes a group effort to put on an event like this every year, and the chapter needs your assistance and support. EAA is built on a spirit of volunteerism, and that spirit is alive within Chapter 1000. Thanks, folks!

- Mike Pelletier

Young Eagles Update

This month's Young Eagles rally was held May 17 at Rosamond Skypark, Rosamond CA. We had 12 pilots and 6 ground crew volunteers, and we flew 49 Young Eagles (we were busy!). The weather was beautiful, mild temperatures and light and variable winds. The Young Eagles started showing up extra early this month, but **Russ Erb** and I were ready for 'em. The flying started at about 8:30 and ended around 12:00. I would like to thank the volunteers for staying out and helping for such a long time.

George Heddy had invited only 25 kids this month, but with our excellent press coverage (we are making the newspapers at least once a month) and the stragglers that came for the pancake breakfast, we managed to double that number!! Thanks again for the large volunteer turnout!!!!! Welcome and thanks to **Bob Kelly** from EAA Chapter 723 for helping us by flying 3 Young Eagles. Once again, Russ Erb brought his computer and Laser printer that was used for registration forms and printing the certificates (If Russ doesn't show up, we will really be in trouble!) - thanks Russ!

June 14 is International Young Eagles day! Please make it out to Fox Field at 7:00 am if at all possible. We plan to make this the biggest rally of the year. Looks like we might even get TV media coverage.

Flight Crew:

Pilots	***Equipment***	***# YE***
Joe Biviano	PA28-140	8
John Bush	C-140	3
Bob Carlson	Bonanza E33	5
Herb Carlson	C-172	9
Brian Duke	Vari-Eze	3
George Fischer	BE-F3S	3
George Hanson	Pulsar XP	1
George Heddy	C-172XP	6
Bob Kelly (Ch723)	AA5B	3
Ozzie Levi	Cruisair	2
Charlie O'Loughlin	Colt	3
Concha Trippensee	AA5B	3

Ground Crew:

Pre-Flight Participant Registration

Russ Erb **Chris Barrett**
Patricia Liefeld **Michelle Holtzman**

Post-Flight Certificate Presentations

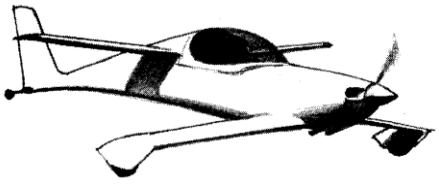
Roseanne Romeka **Janet Samuel**

Young Eagles Flown this Rally: 49
Young Eagles Flown this Year: 218
Young Eagles Overall Total: 1650

Pilot Operations:
George Heddy
948-4431

Ground Operations:
David McAllister
David.McAllister@dfrc.nasa.gov
256-4829

- David McAllister



CORROSION CONTROL - Sealing Faying Surfaces

Why?

The idea of sealing faying surfaces is the same as the old wood ships using pine tar between planks (mating surfaces) so that the were no leaks. Also it kept the water from being trapped between structure and rotting (corroding) the wood at the faying (contacting) surfaces.

Years ago at the beginning of adhesive bonded metal helicopter blades there were a number of blades that became unbonded during service use. This was due to the adhesive wicking (ever so slightly) water though the bond line. The water then caused corrosion of the metal underneath the adhesive. The metal essentially became powder at the bond line. Obviously additional research was quickly conducted into other adhesives and surface corrosion preventative coatings which eventually greatly mitigated the problem.

The Navy has always (at least during my professional career) required sealing of faying surfaces on their aircraft. Bare 2024 aluminum can corrode in hours. Think of the Navy trying to keep their planes from corroding on carriers in salt air.

The Air Force, desiring longer operational lives, now requires improved sealing of faying surfaces, bushings and bolts on all new designs using metal.

This article covers the sealing of faying surfaces only. You should have already read the article on chemical conversion coatings (which I sometimes call "chem film" (either as a noun or as a verb)) (May 1997 ***The Leading Edge***). There are two parts to "sealing" faying surfaces: (1) the surfaces in contact and (2) the edges where an electrolyte (water) could enter.

It may appear that I use "primers" and "sealant" interchangeably. When I use primer, I mean primer. Whenever I use the word "sealant" or "sealer" I mean MIL-S-8802 or similar.

MIL-F-7179 Requirements

This MIL Spec, *Finishes, Coatings, and Sealants for the Protection of Aerospace Weapons Systems* is the spec for the what and how of corrosion control. It covers the primary metals and features of aircraft, missiles, and missile sites. It is used here as the basis for discussing aluminum structures as it can apply to homebuilt aluminum aircraft faying surfaces.

Fayed Surfaces of Similar metals - Seams and joints that possess fayed surfaces of similar metals shall be protected, at a minimum, by application of primer coating to each surface.

In addition to primer coating, all faying surfaces that have an exterior edge shall have the faying surfaces, seams, and edges sealed with a sealant other than primer.

A minimum gap of .020 inch is required for exterior surface butt joints of similar metals.

Fayed Surfaces of Dissimilar metals - Fayed surfaces of dissimilar metals shall have a primer coat and be sealed with a sealant.

Exterior surface butt joints of dissimilar metals shall have a gap of .060 to .120 inch. The depth of the groove shall be of sufficient depth to retain the hardening type sealing compound, which shall be subsequently applied and smoothed flush with the surface of adjacent dissimilar metals.

Recommendations for Home Built Aircraft

The basic procedure of aluminum to aluminum sheet metal structures is given here. The recommendations are a compromise for reasonable corrosion control, time to fabricate, and life cycle cost (you have heard of, "Pay me now, or pay me later").

There are many variations on the basic procedure. A few will be mentioned now with others cropping up in future discussions. From time to time each person will have to make "design compromises" between corrosion control and other requirements.

For illustration purposes, Figure 1 shows a sheet metal clip attached to two other pieces of sheet metal. For clarity of construction no sealant is shown. This represents attaching a wing rib to a spar or attaching a frame to a skin, or installing an intercostal between frames for mounting a component.

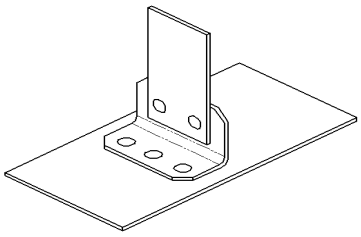


Figure 1 - Illustrative Clip (Don't Use for Rivet Spacing)

After the rivet holes have been drilled and cleaned, prepare Class 1A chemical conversion coating on both pieces that are to be joined. Be careful and not over do the chem film dwell time (Overdone it can weaken the edge of a countersunk hole). When the surfaces have hardened (cured) it is a good time to put on a thin primer coat to assist in protecting the chemical film.

(Some people will chem film then drill and clean the holes. They dab primer on the bare places. I question why do just a good job when it is easy to do an excellent job of corrosion control.)

Just before riveting two pieces together, brush (spray or lightly wipe) the faying surfaces with primer, then install the rivets "wet." If the rivets are inside and not exposed to weather, the "wet" can be primer. If one end of the rivet will be in the "weather," then use sealant. Use a "Q" tip to put in a lot of primer just before placing the rivet in the hole. If you are using sealant, experiment a bit so that you don't get too much squeeze-out. It is a skill.

Figure 2 shows why it is good to prepare the rivet holes before chem film and why the rivets should be installed wet. After drilling the holes of both sheets, the holes need to be deburred. We always used a large twist drill. The deburring leaves a small chamfer which may or may not be filled with rivet when it is installed. Installing "wet" pretty well ensures that there will be no void for electrolyte (water) entrapment.

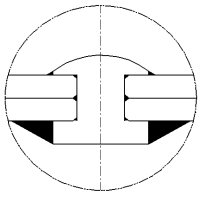


Figure 2 - Sealing a Rivet

Figure 3 shows how to seal the edges of clip with a sealant. This should be accomplished whether the joint is inside or will be exposed to the outside.

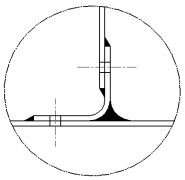


Figure 3 -- Sealing the Clip

Note in the view of Figure 4 that the corners of the clip are chamfered (they could be rounded). It will be difficult to effectively seal a 90-degree corner. There are other design reasons for chamfering corners. You probably know a few if you have worked with sheet metal.

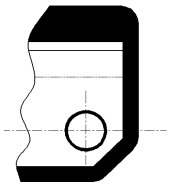


Figure 4 - Top View of Sealing the Clip

Lap joints - Many designs have lap joints (Figure 5) in the fuselage skins. If the outside is to remain natural aluminum color, then mask the panel so you can put a chemical conversion coat where the panel is overlapped on the outside.

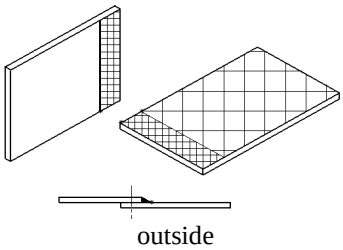


Figure 5 - Outside Lap Joint

I would chem film the entire inside skin. The coating can be accomplished after all of the holes are drilled and cleaned. Carefully mask the outside of the rivet holes if natural finish on the outside is to be maintained. Apply a thin coat of primer on the cured chem film.

Just before installing the rivets, apply a thin coat of **sealant** to each fayed surface. Install the rivets wet with sealant. As in Figure 5, seal the inside edge of the lap joint. On the outside clean off any sealant squeeze-out before it cures. For the rivets where moisture might collect on the inside, even though they were installed wet, I would also seal them as shown in Figure 2.

There are many ways to prepare the outside surface and keep the natural finish. There is a clear chemical conversion coating but I am not yet familiar with it.

Faying Surfaces of Dissimilar Materials

Sealing faying surfaces of dissimilar materials has much more to it than the simple statements made in MIL-F-7179 Requirements. It will be best to present the subject in the future with the discussion of the galvanic table and electrical bonding.

Electrical Bonding

By now, what with all the sealing of faying surfaces, you are probably curious about electrical bonding for static electricity, lightning, grounded electro-mechanical components and EMI (Electromagnetic Interference). "Electrical bonding is an art."

Please wait for a future article: **"Three Rivets in the Bulkhead."** What I will have to say (write) can not be sung to "Three Coins in the Fountain," but remember it because we will talk about it more. For now, **think about installing three rivets, next smaller size, "dry" in locations where there is likely to be corrosion.** Some of these locations might be on the bottom of the tail boom of a tail dragger and at the low spot in the fuselage for an aircraft with tricycle gear.

Caveat

Although I believe the best corrosion control is produced by starting with a chemical conversion coating, very good corrosion control can be had by using two coats of corrosion inhibiting primer in place of the chem film. I would insist on chem film in factory aircraft, but I perceive that Homebuilts receive more Tender Loving Care.

- Lee H. Erb
EAA Chap 1000 Det 5, Arlington TX; EAA Chap 34
LeeErb@compuserve.com or (817) 275-8768

Sesame Street Undercover *Project Police*

Here's this month's quickie quiz question: Can you identify the undercover ***Project Police*** officer on the children's show *Sesame Street*? It is not an obscure character, but one who appears quite frequently. Submit your answer with justification of your choice to the Newsletter Editor in person, by phone, by e-mail, or any other reasonable means.

BEATING THE HEAT

We are definitely in the warm weather season now and you can bet that the temperatures will be going up in the next few weeks. It is probably a good time to discuss some common sense gear for airplane builders and pilots, specifically those of us who live in the high desert of the Antelope Valley.

Camelbak

One of the things that I have discovered while living and working in our dry local environment is that if you don't keep pushing your water, you are going to end up feeling pretty wiped out at the end of the day. I've made the mistake of getting so locked up with trying to finish the latest airplane mod, that I forgot to take a break, get a drink, and get some lunch. After learning a few hard lessons, I'm taking a hint from the Edwards Survival School, the ECO-Challenge participants, and performance bikers everywhere. When I go to Mojave or even work in the yard, I now put on my Camelbak hydration system and I sip water continuously. Boy, does this help! For you folks that haven't seen them, the Camelbak system is a 70-90 fluid ounce collapsible reservoir in a backpack. A transparent drinking tube attaches to the reservoir and wraps around your collar providing a convenient way to stay hydrated. In order to stay hydrated and healthy in the heat, drink a lot.

Another interesting thing about this type of drinking system is that there are water pack styles which are designed to interface with military ALICE load carrying equipment packs. What this means to the experimental airplane pilot is that if you have a tight cockpit, you can now easily integrate a hands off drinking system into your airplane (i.e., which will keep you refreshed and be relatively spill free on those long cross country flights). What we need now is a comfortable, hands off, and spill free piddle pack system. *How about it, NORM??????*

Performance Eye Wear

Retire your old Air Force sunglasses. Several years ago after getting a new pair of hard contact lenses, my eye doctor pointed out that my sunglasses were pretty scratched up and that I should really consider their replacement now that I had a new set of eyes. I did a little catalog shopping and decided to try out the new breed of sunglasses. I ordered a pair of wrap around Gargoyles as I figured they might give me some added protection from the "dirt in the eye" contact lens disease that I find so common in this area. Not only did they provide significant UV protection for all sports, they lived up to my goal of keeping my eyes dust free. One of the advertising points was the ability to sustain a "00" Buck Shotgun impact without penetration. I have since moved on to a pair of Okley Plutonite sunglasses as these provide a better facial fit for me and seem to be less prone to breakage. I have run with them, biked with them, shot with them, driven with them, and flown with them. They work good and last a long time.

To be sure, these are <u>not</u> cheap "Blue Blockers" we are talking about here. However, whether you choose Gargoyles, Protective Optics, Oakley, Scott or some other name brand polycarbonate glasses; you will have excellent UV protection, wide angle ballistic protection (some of these lenses exceed ANSI 787.1 and Mil-S-44366A fragmentation standards), and enhanced head retention under wind loads. Most of these glasses come in a variety of lens colors (including clear for nighttime protective use), UV levels, and head sizes.

On a related note, I order all my prescription glasses with polycarbonate lenses. I have had numerous encounters with flying debris from high speed machining and the polycarbonate lenses work every time. There are also some very effective polycarbonate sunglasses that fit over your regular glasses. You see a lot of senior citizens wearing them! Funny thing is, they are cheap, work very well against UV and also provide ballistic protection.

Head Cover

Let's face it, a lot of us are getting a bit older now and a bit thin on the scalp. In the summer and in the desert, it makes sense to keep a hat on your head. To me that hat is a ventilated, light colored affair with plenty of coverage for your face, neck, and ears. Tilley and OR make great hats in this category, but it is always entertaining to see a good old Pith Helmet. I like straw hats, too. Bottom line, wear your hat and prevent skin cancer!

Clothing

In the heat, stay fully clothed. The clothing helps control perspiration and prevents sunburn. Even undershirts are a good thing. Keep the colors light because just as plastic airplane enthusiasts know, the lighter the color, the cooler the skin surface temperature. Cotton is good stuff.

Where Do You Get All This Stuff?

You can find a lot of this gear in ski and sports shops like "SPORTS CHALET". You can also get much better prices through wholesale mail order houses. I like performance bicycle shops myself, because after you finish buying your gear, you can check out what the cycling enthusiasts are doing with carbon, aluminum, and steel in their frames.....**tube and rag will never die**!

- Brian Martinez

New Member

Chapter 1000 is happy to welcome our newest member **Chris Reeder**. Like several of our members, Chris has yet to attend a Chapter 1000 meeting. Chris is a 2nd Lieutenant in the Air Force, having just graduated last month from the US Air Force Academy. His first exposure to Chapter 1000 was during the Fall Semester of 1994 when **Russ Erb** was his instructor for Fundamentals of Aeronautics. That semester he signed up as an Aero major, progressing to eventually take the Flight Test Techniques course. During the course's field trip to the Test Pilot School, we found out that Chris would be going to Undergraduate Pilot Training next year. Until that time, he needed something to keep him gainfully employed.

Since Chris was a Soaring Instructor Pilot at the Academy and holds a CFI-G, TPS asked him to spend that time on the staff at TPS as a soaring instructor for the staff and to do all of that stuff that it's nice to have a 2nd Looey around to do. Since he was going to be here all of that time and was already an EAA member, we extended him an invitation to join the best chapter in EAA, which he eagerly accepted. He'll be coming to Edwards sometimes in August 1997.

Chris also flies a 1971 Herb Ross Pitts Special S-1C, N2363. Maybe at a future meeting Chris will tell us about the time he successfully made a forced landing in a two-seat Pitts minus a few minor items (like a prop and a canopy).

Project Police Blotter -- Secret Project Investigated

Quartz Hill, 31 May 1997. After a very productive session at **Frank Roncelli**'s Skunk Works using his 8' brake to bend up a whole mess of spars for the **Bearhawk**, I decided to take action on some taunting threats from one **B. Martinez**, who had made it known to the ***Project Police*** that he had already started work on another secret project. This even while continuing a much publicized flight test program on the Q-200.

Following a stealthy approach, I successfully maneuvered the ***Project Police Paddywagon***, stuffed with newly formed Bearhawk parts, into the empty driveway of the Martinez domicile, cleverly managing to miss all of the sprinkler heads. There was no sign of anyone at home. Later investigation would find that the Martinez family has fallen prey to the propaganda of a currently running Chevron commercial and have actually put a ***car*** in the garage! Where did they ever get approval for that? Really, an automobile occupying prime workshop space!

Undaunted, I bypassed the roof stomping step (good move as I had not packed a ladder and none was obviously available) and proceeded to the door. The occupants of the house were summoned by a press of the small normally open push-button switch located by the door. **Arlene** answered the door, and before I could even read her her rights, she shot back with "He went to Mojave today." As I reeled from this opening shot, she made her first mistake--she invited me in to see the project.

Sten escorted me to the scene of the ~~crime~~ project, where I was greeted with what looked like an oversized canoe and the unmistakable smell of a composite builders workshop. My next impression was that Brian was trying to do Burt Rutan and his Boomerang one better by building a strange fuselage with an obvious bulge on the left side which was not matched by a symmetric bulge on the right. Is this some strange, classified observation bubble, along the lines of a Fiesler Storch? Yes, but no. Sten explained to me that the bulge was the canopy, and I was looking at the mold for the left half of the fuselage which was laying on its side.

It is obvious that Brian and Arlene are raising Sten to be an intelligent, well trained EAA member. In spite of Brian's obvious absence during an unannounced visit of the ***Project Police***, partially excusable only based on his claims that he was working on his ***other*** project, he was well represented by Sten. Sten explained the various parts of the project with such aplomb it was as if Brian had been there. He explained how the mold would be used to vacuum bag the actual fuselage. After the two halves are pulled, they will be cocooned while the wings are being built. Brian thinks he should be able to pull at least three parts from each mold, so if you'd like to join him on a project...

Classified sources forwarded Brian's description of the project: "I pulled the left hand female mold off the male plug this morning.....worked out fine! Just a few dry spots on the inner mold surface, but that is just finish work. For an 11 foot long part.....this is the smoothest release that I have ever pulled. I used heavy "turtle wax" with an alcohol based mold release that Aircraft Spruce sells. Worked great. Damn thing slid right off. The female mold, as I told you yesterday is (1) an inner layer of two bi-directional glass layers (8 ounce cloth), (2) core layer of plastic micro-fill in vinyl-ester resin (1/8 - 1/4" thick), and (3) two bi-directional glass layers outside. The resin system for the mold is vinyl-ester because it is cheap and after a room temp cure allows a free standing post cure to a T_g of about 200 deg F (i.e., put in black plastic in the summer sun). This should allow me to step up my elevated temp cure epoxy part to a significant 200 deg F cure followed by a higher free standing post cure a bit higher. The micro-fill core keeps the mold light in the middle where the loads are only 20% as opposed to the surface skins which take 80% of the loads. The Berkut guys mentioned that you could do excellent molds this way. This should be good enough to pull at least 3 - 4 fuselage sides out of."

So what is this secret project? Such information is still **CLASSIFIED**, but some details were extracted during intense interrogation. Brian has a history of building **fiberglass** aircraft of the canard type as made popular by **Burt Rutan**. This aircraft will be a modification of a twin engine aircraft that **defies** description. Some of the harder edges have been rounded, and he will be using a vacuum bagged molded construction to cut down some of the structural weight.

Arlene is well practiced in dealing with the ***Project Police***. While no chocolate chip cookies were seen, the ***Project Police*** were offered a chocolate shake which was currently in production. Due to a state of aggravated dehydration, it was politely refused in preference for a few glasses of wonderful ice water. Brian tells us more about

the importance of avoiding dehydration elsewhere in this newsletter.

Overall ***P²3DI*** rating: **A+** (Excellent Water)

- Russ Erb, *PPO*

Photo Tips

Review for your pre-Oshkosh preparations

(The following article is reprinted by permission from the July 1995 issue of ON FINAL, the monthly newsletter of EAA Chapter #25 - Minneapolis, Minnesota USA. Check out their web site at http://web.apertus.com/~frankh/eaa25.shtml)

If you're like me, it's that time of year when we'd best again familiarize ourselves with our camera. Through the past fifteen years since I've attended my first Oshkosh convention, I've shot a lot of film. Yet, I still am not a very good photographer! Mostly, I shoot several rolls of film and acquire a precious few pictures worth showing anyone. Actually I've got about 500+ slides of aircraft, and in this amount there only a couple dozen that I really think are top shelf. So, what are the basic guidelines? The following is a collection of hints that I've recently read in getting reacquainted with my camera.

Photo equipment for your static aircraft shooting session should include the following items:

1) a 35 mm Single Lens Reflex (SLR) camera; 50 mm (std) lens and/or short zoom, lens hood to prevent glare from sunlight

2) adequate filters

3) electronic flash unit *(check for fresh batteries)*

4) an adequate supply of film

5) miscellaneous items to include - a sturdy tripod; a short stepladder, a water bucket *(no joke, it's for wetting down the pavement)*.

Most of your shots can be taken with a standard 50 mm lens...and your attempts at sharp, critical focusing are usually more consistently successful with the use of a standard lens. A short zoom lens such as a 35-70 mm or 28-85 mm can come in handy, since it allows more creativity and "framing" convenience. Be very careful of using wide-angle lenses for wider-angle zoom settings, since they will often introduce an unwanted linear distortion.

A UV filter will screen out ultraviolet rays, resulting in sharper, brighter hues when shooting color. A polarizer filter works to reduce or eliminate glare from reflected light, and is usually essential in outdoor photography. A polarizer can reduce the "white sheet" glare of a windshield to invisible glass. The blinding glare of a chromed or shiny metal surface may be eliminated or "adjusted" by rotating the filter to achieve the desired effect. A permanently-mounted, screw on type UV filter has the secondary benefit of protecting your sensitive lens surface coating from scratches. The filter itself becomes the only surface that requires periodic cleaning.

It may at first seem odd, but you can use an electronic flash on virtually every photograph you take of a static aircraft...even those shot in full sunlight...in fact, especially those shot in full sunlight. Sunlight produces unwanted, harsh shadows along the vertical surfaces and shaded sides of an aircraft, as well as on the pavement beneath and adjacent to it, very often ruining an otherwise excellent shot. A flash unit for close-in shots will help to illuminate the subject evenly and "soften" remaining shadows, while having little or no effect on the background exposure, since the background is much further away and less affected by the flash. For most shots there is no need to compensate for the flash's additional light. For color photos, you might try adjusting exposure downward 1/3 f-stop or so, just to play it safe. Flash illumination employed in broad daylight is commonly referred to a "fill flash", meaning that it is used to add or "fill" in additional light where otherwise shadows would result from existing (sun)light. Most sunlit shots will be markedly improved by using "fill"; few will ever be adversely affected.

Another good idea is to "bracket" your exposures, meaning to shoot additional shots of the same scene at say 1/3 aperture stop above and 1/3 aperture stop below "normal", thus helping to assure that one shot will be perfectly exposed. This is particularly critical when shooting color slides, whereby even a tiny bit of overexposure can start to bleach out the color, nothing can beat perfectly-exposed color, especially color slides. Bracketing exposures is not critical with B & W (or color negative) film, since desired adjustments can easily be made in the print processing.

On actually shooting your aircraft subject - take a variety of shots. Different aircraft often show best at different angles and different camera heights. Study your subject through the lens and decide what are the best angles. It helps to know your camera but most SLR cameras reveals a slightly narrower view than that actually exposed on the film. Generally small general aviation aircraft look their best from a 3/4 frontal or trailing position, and optimum camera height will vary from one aircraft to another. If possible (say you're shooting your own aircraft), find good locations. A popular trick is to hose down the pavement underneath the aircraft, the resultant reflections often make for an exciting, eye-catching shot. Additionally, try to make sure that the background isn't too busy. A mishmash of trees, bushes, airport signs, other aircraft, or people behind your subject aircraft will usually result in your aircraft getting lost in the confusion. A solid wall, a pond, a grassy field, or even an empty ramp beats a busy background nearly every time. Avoid harsh shadows; late afternoon shots (especially) are often ruined by long shadows of the aircraft's wings, of the nearby buildings or trees, or worst - the photographer himself. In most cases, you should "fill the frame" with the subject aircraft, not peripheral scenery.

If your shutter speed must be slower than 1/125 of a second, use a tripod or find some way to steady your camera. The best guarantee of a sharply focused photograph is a sturdy tripod. Generally, avoid aperture settings lower than f-5.6, since depth of field (e.g., continuous sharpness from the nose of the aircraft to the tail) is critical in shots enlarged beyond wallet size, thus magnifying the effects of faulty focus. For instance in a 3/4 front view, if you focus at about the cockpit using a large aperture opening, the nose and the empennage blurs. How

do you deal with this? First try to use a smaller aperture - f-8 to f-16 where possible, and then focus on the point nearest the camera. The rule is that the larger the f-stop the smaller the lenses opening and the deeper the focal field of view.

What films to use? The most common advice for outdoor color work is to employ 64 ASA Kodachrome (slide) film. For four main reasons; the cost is lower, you're able to preview the slides first before printing individual shots *(most of us, really only get 10 or 12 good shots from a 36 exposure roll)*, you have a good reading as to whether the printing process was poorly accomplished, and you need color slides for the color separations necessary in any professional color publishing work.

As I've previously admitted, my pictures are far from being of professional quality. I only use my camera very sporadically throughout the year and this shows in the final results. Some of my common screwups include: an incorrect ASA setting for the film loaded, not using the correct film speed for the conditions, not always having a tripod handy *(e.g., left it in the car)*, forgetting to check the camera's batteries, and due to my particular camera - not switching off the automatic functions when I need to use one of my manual-only lenses, etc. After this brief review, I'm hoping that you too will experience improved photographic results at this year's Oshkosh convention. Good luck to all of you!

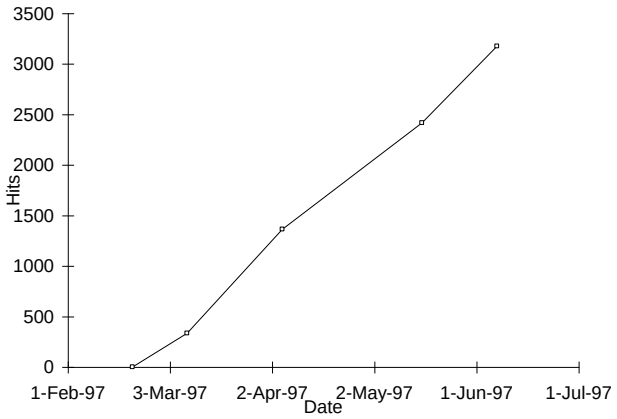
- Frank J. Hanish, EAA Chapter 25

Web Site Update...

As of 7 June 1997, we have **3174** hits on our Web Site! (Note: last month's reported number was a bit high because at the time the counter was malfunctioning and I guessed at what I thought it had been) We're currently running about 35 hits per day. See the graph of the activity below.

We have added a better set of link pages so that you can use our web site as your jumping off point for your trips around the web. Future improvements will include pictures of the various aircraft by their links so you can use it to find out more about that new three-surface aerospace vehicle you saw at the last Fly-In even if you can't remember it's name. We are also researching a "member's only" section which could house things such as current newsletters and member rosters.

Everyone is encouraged to do as **Norm** does: Tell every EAAer you meet to check out our web site!



Usage History on http://www.eaa1000.av.org

Just a reminder that the EAA Chapter 1000 Web Site is hosted courtesy of Quantum Networking Solutions, Inc. You can find out more about Qnet at http://www.qnet.com or at 805-538-2028.

Still More Quotable Quotes

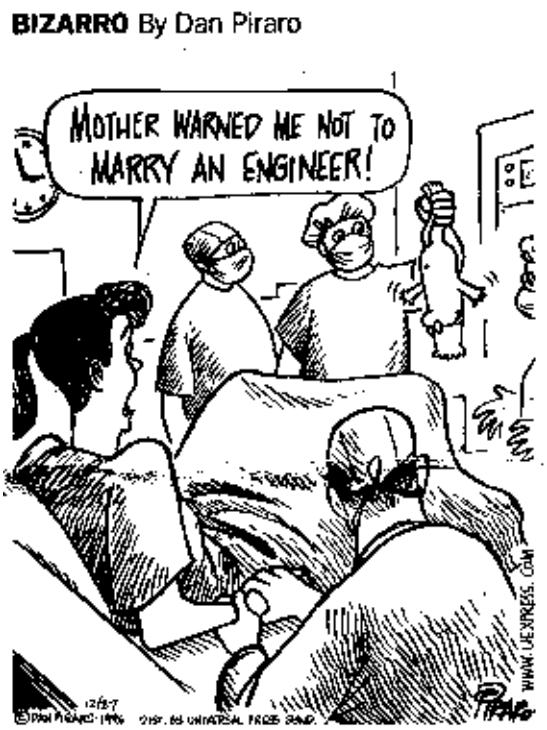
Norm Howell has done it again. He was quoted in the *Valley Press* describing a new high-tech answer to the age old problem of answering the question "Where do we fly today?" Simply spread a sectional on the ground and place an ant on it (species not specified). The first airport the ant crosses is where you fly. Baiting the chart with food is considered cheating. Besides, if you were doing that, you've probably already decided where you want to go.

Project Police and President Pelletier To Set Up EAA Chapter 1000 Det in Tucson, AZ -- The Rest of the Story

Okay, so last month I told you that **President Pelletier** is moving to Tucson, AZ. In the rush to get to press, I left out one minor detail: Departure date will be mid-to-late August 1997.

Note: This is still your big chance to volunteer for the position of President or Vice-President!

Another Take of the Birth of a *Project Police Officer*



Chapter Librarian Changes Again

Russ Erb just recently accepted a job at TPS working in the Technical Support division. If you've been following chapter history, you'll realize that part of the duties of such a job are to serve as the EAA Chapter 1000 librarian. Russ will be taking over from **Norm** in this capacity. The library is open at TPS during normal duty hours, but for those of you who that's not convenient for, see Russ before or after the chapter meeting, or phone or e-mail your request for what you'd like to check out.

FAA Safety Program Day Following Chapter 1000 Meeting

That's right--The Antelope Valley 99's will be hosting an FAA Safety Seminar on Wednesday, 18 June, 7:00 p.m. at Fox Field (WJF). I suspect this would count toward the FAA's WINGS program. Call Connie at 256-4619 for details.

Let's go and support this so that the FAA will be encouraged to have more of these programs up here and not just "down below."

Bumblebee Flying Could Aid Aicraft Design

Any good scientist knows insects should not be able to fly--their bodies are too fat for their tiny wings to lift. But an expert on aerodynamics and insect flight said Wednesday he had solved the mystery and come up with data that may help aircraft designers.

Reporting in the science journal Nature, Charles Ellington said insects create a complex pattern of vortices when they flutter their wings. Each vortex acted to lift the insect up into the air. Experts knew this must be happening, they just did not know how.

Chapter 1000 Calendar

Jun 14: International Young Eagles Day - Chapter 1000/49 Young Eagles Flight Rally. 7:00 a.m., Fox Field (WJF), Lancaster CA. (805) 948-4431

Jun 14 - 15: EAA Chapter 723 Fly-In/Airshow. Camarillo, CA (805) 985-4058

Jun 17: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (805) 258-8134

Jun 18: FAA SAFETY PROGRAM "Psychology of Pilot Error" 7:00 p.m. Sponsored by AV 99's at Fox Field (WJF) (805) 256-4619

Jul 2: EAA Chapter 49 Monthly Meeting, 7:30 p.m., Sunnydale School. 1233 W. Ave. J-8, Lancaster, CA. (805) 942-7149

Jul 8: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., Edwards AFB. Test Pilot School, MOL Room (805) 258-8134

Jul 9 - 13: Northwest EAA Regional Fly-In, Arlington WA. (360) 435-5857

Jul 12: Flyout: Fresno (805) 256-8433

Jul 15: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (805) 258-8134

Jul 19: Chapter 1000/49 Young Eagles Flight Rally. 7:00 a.m., Fox Field (WJF), Lancaster CA. (805) 948-4431

Jul 30 - Aug 5: 45th Annual EAA Fly-In and Sport Aviation Convention. Wittman Regional Airport. Oshkosh, WI (414) 426-4800

Aug 6: EAA Chapter 49 Monthly Meeting, 7:30 p.m., Sunnydale School. 1233 W. Ave. J-8, Lancaster, CA. (805) 942-7149

Aug 12: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., Edwards AFB. Test Pilot School, MOL Room (805) 258-8134

Aug 19: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (805) 258-8134

Oct 9 - 12: Copperstate EAA Regional Fly-In, Williams Gateway Airport, Mesa AZ. (520) 228-5480

Oct 18 - 19: Edwards AFB Open House and Air Show. Homebuilts on display in Hangar 1600.

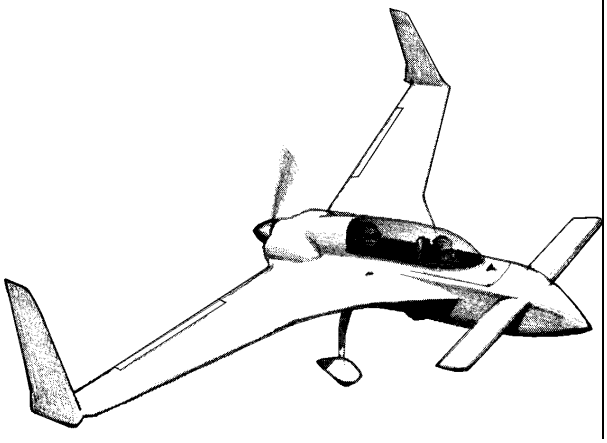
Oct 31 - Nov 2: 1997 Fox Field National Air Races. Fox Field (WJF), Lancaster CA.

Web Site Call For Pictures!

The Web Site Director needs pictures of **You** and **Your Project** or **Aircraft**! We're putting together a section on our web site showing our members and their aircraft/projects. Get your favorite picture of your airplane or project (With or without you in the picture (your choice), in the air or on the ground) to **Russ Erb**. Pictures can be returned if you so desire. If you are not in the picture, be sure to label it so I'll know who's it is.

Your project does not have to be complete to be included. My best picture so far is a table full of wing ribs.

If you already have a scanned copy of your photo in a computer, you can send a copy of that file. Otherwise, bring your photos to the meeting!



For Sale:

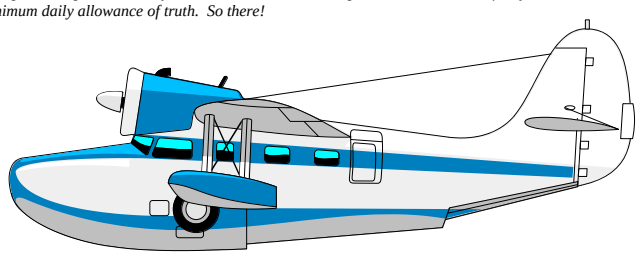
Sonerai IIL project. Fuselage and wings 95% complete. Modified for A65 engine. Engine torn down for overhaul but complete with a great many spare engine parts. Includes instruments. Hydraulic brakes. All excellent work. Call Mike Pelletier. 805-258-8134

To join Chapter 1000, send your name, address, EAA number, and $15 dues to: EAA Chapter 1000 Treasurer, Mike Meyer, 6809 Spaatz Dr, Edwards CA 93523. Membership in National EAA ($35, 1-800-843-3612) is required.

Contact our officers by e-mail:
Mike Pelletier: mpcubed@ptw.com
Gary Aldrich: gary_aldrich@pobox.com
Miles Bowen: bowenfam@tminet.com
Mike Meyer: aerosong@ptw.com

Inputs for the newsletter or any comments can be sent to Russ Erb, 805-258-6335, by e-mail to erbman@compuserve.com

*From the **Project Police** legal section: As you probably suspected, contents of The Leading Edge are the viewpoints of the authors. No claim is made and no liability is assumed, expressed or implied as to the technical accuracy or safety of the material presented. The viewpoints expressed are not necessarily those of Chapter 1000 or the Experimental Aircraft Association. **Project Police** reports are printed as they are received, with no attempt made to determine if they contain the minimum daily allowance of truth. So there!*



THE LEADING EDGE
MUROC EAA CHAPTER 1000 NEWSLETTER
C/O Russ Erb
6708 Doolittle Dr
Edwards CA 93523-2106
http://www.eaa1000.av.org

THIS MONTH'S HIGHLIGHTS:
REGULAR MEETING 17 JUNE AT TPS
ROSAMOND FLY-IN REPORT
SEALING FAYING SURFACES
PRE-OSHKOSH PHOTO TIPS