experimental aircraft association

THE LEADING EDGE

NEWSLETTER OF MUROC EAA CHAPTER 1000

Voted to Top Ten Newsletters, 1997, 1998 McKillop Award Competition

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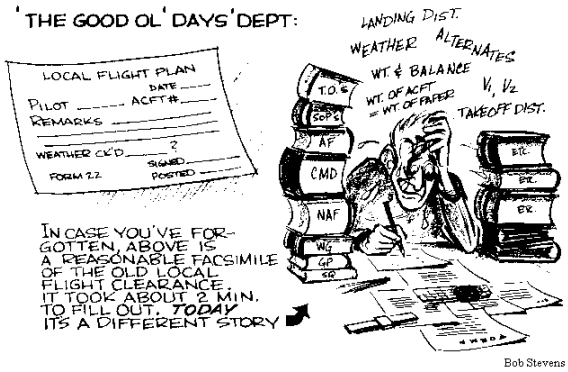
http://www.eaa1000.av.org *September 1998*

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:



FAR Part 91 Updates

Speaker: Wen Painter
Tuesday, 15 September 1998
1700 hrs (5:00 PM Civilian Time)
USAF Test Pilot School Auditorium
Edwards AFB, CA

Well, take note all you propeller heads out there, this month we have an educational enlightenment in store for you. **Wen Painter** will be presenting a review of the FAR Part 91 rules and regulations. As most of you know Wen is a CFI and works out at the National Test Pilot School. He's an active member of EAA Chapter 49 in Lancaster and is an all around great guy (he let me fly his J-3 Cub once). He's also been to Russia and looked at all of their military experimental aircraft at several military bases, and, according to Wen, they refer to him and all of us who fly here in the states as **Hooligan Pilots**. Civilians can't fly in Russia, but that's another story (maybe we can get Wen to tell us some Russian stories during schmooze time).

Back to the evening's event, Wen is going to give us a review of FAR Part 91. When he completes the review, he will pass out certificates, which he will sign, that will complete the ground school portion of your biannual flight review. Yes folks, all this and it's free!!! The certificate is good for two years from the date of our meeting and you get Wen's autograph to boot (famous Hooligan Pilot). This is an excellent way to save money on your next BFR, and you can't beat Wen's presentation. It promises to be a fun and informative evening, so don't miss this once in a life time event (how often do you think we can talk Wen into doing this anyway?).

- George Gennuso

Project Police Warp Time: Machtober Comes Early This Year

AAAAUGH!!!! Is it that time again already? Yep, time to cash in all of those Spousal Points you've been saving up for Kitchen Passes. Here's the latest on the big aviation events planned between now and when you get the next issue of this newsletter.

EAA Chapter 49 Old Fashioned Fly-In

Quick! Look at your watch! If necessary, look at a calendar. If **12 September 1998** is in the future or is today, you can still catch the **EAA Chapter 49 Old Fashioned Fly-In** at Fox Field. This is the inaugural event this year, since our two chapters decided it would benefit both chapters to hold separate fly-ins. We in Chapter 1000 expect you to personally show up and support Chapter 49 to make this event a success.

Chapter 49 decided not to start small on this fly-in. They're going all out. Besides flying and meeting cool EAAers from other chapters, there will be a pancake breakfast, barbecue lunch, seminars, weight & balance clinic, spot landings, Young Eagles, Flying Start, and vendor displays.

No Excuses! Just go!

Golden West EAA Regional Fly-In

Here's another inaugural fly-in this year. Again, this is a fly-in that made the conscious decision not to start small.

Only this is a regional fly-in, which means that it is on the scale of Copperstate or Arlington. We've been hyping this event in this newsletter for some time now, so you have no excuse for not being aware of it. If you need more info, go to **http://www.gwfly-in.org**.

To be held on 25-27 September 1998 at Castle Airport, Atwater CA, this should be an exciting event. Formation of a ***Project Police Tactical Assault Force*** has been authorized by the ***Project Police Kommandant*** for inspection of and participation in this event on Saturday, 26 September. Plan now to get out your black uniform shirt, find someone who doesn't have a ride, and drag them along as you fire up your favorite ***Aerial Assault Vehicle*** to make the trip. It is critical that a mass showing of the ***Project Police*** be made to whip this fly-in into shape and ensure many successful years to come.

I suspect that our own ***Project Police*** **Officer Jon Goldenbaum** will be there with the usual ***Poly Fiber*** booth. I hereby propose that the ***Poly Fiber*** booth be used as a central communications post for our ***Project Police*** activities. Check in there for any word on mass gatherings to take pictures of ourselves, to find out who else is at the fly-in, or whatever. While there, learn something about fabric covering and try your hand at it. **Jon** doesn't know yet that he has been appointed to this post, at least not until he read this...

Bohunk Fly-In

(*This article blatantly stolen from Chapter 49's newsletter, so there...*)

Bill Safranek is once again hosting a Fly-In at **Bohunk Airport** on September 27th (*the day after our raid on the Golden West EAA Regional Fly-In*) between 11:00 AM and 4:00 PM. There will be plenty of food in the form of Helen and Pat's Deep Pit Barbecue, deserts, and drinks. As has been his custom there is no charge but you are welcome to voluntarily put whatever amount in the pot that you feel it is worth to you. As is also Bill's custom, **any profits will be contributed, 50/50 between Chapter 49 and Chapter 1000** (*emphasis added*).

This year Bill would like you to take anything you like to the Fly-In that is antique. Bring your antique airplane, your antique car or your antique wheelbarrow. If it is an antique he would like to have you show it off. (*I've got a slide rule--that's got to be an antique!*) Of course, you don't need to have something antique to be welcomed. Come to think of it, if you just bring yourself many would fulfil any antique requirement.

There will also be a parts sale & swap meet, so if you have any parts, tools, materials or anything that you want to sell, bring it to Bohunk.

Bill is also thinning out his projects and has many tools, materials, and supplies of his own for sale at "1939 prices." He also is willing to part with some of his projects but he says they may cost you. "Instead of 1939 prices I may have to charge 1945 prices for some of the projects."

(*To get to Bohunk, you'll find it on your Los Angeles sectional 5 nm southwest of Fox Field at the edge of the Class D airspace. Make a call to the Fox Tower to tell them you're landing there, since you'll be in their airspace!*

On the ground, head west on Avenue J to about 85th St West. That's shortly after you pass the Mira Loma prison. You'll see an old metal roofed building and several T hangars on the south side of the runway. There is a mobile home and another newer metal building just north of Ave. J.

Before you leave, be sure to tell the old curmudgeon ***Safranek*** *what a great time you had and what a great guy he is--it'll drive him nuts!*)

Edwards Open House

In case you're new to Chapter 1000 (which is your only excuse for not knowing about this), the General Aviation display in Hangar 1600 at the Edwards Open House is the responsibility of our chapter and one of our big events of the year. This year's event on **3 October 1998** has been dubbed ***Operation Desert Valet '98*** and is under the command of ***Project Police Kommandant*** **Gary Aldrich**.

Fly-ins are by **INVITATION ONLY!** If you have an airplane that you would like to fly in, contact Gary Aldrich to find out if we still have room. Whether you are flying in or not, call Gary and tell him that you'd like to host a couple (or more) of pilots who are flying in at your home on Friday night (2 October 1998). Plans are coming together for ***The Big Schmooze*** banquet that Friday night. All fly-in aircrews and their hosts are invited to this event.

On Saturday, 3 October, your mission is to show up and have a good time. We'll have the coolest Mach 3 chapter booth set up in Hangar 1600. When you need a break from roaming the flight line, come hang around the booth and talk to people about how much fun EAA is. We're hoping to have a display of some projects in progress, so if you have something you'd like to display, contact **Russ Erb**.

This year we expect to have flying demonstrations of our own **Norm DeWitt** flying his aerobatic routine (see article in this newsletter) and **Jon Sharp** with *Nemesis* and possibly other Formula 1 racers.

We are also looking to have displays from some of the larger homebuilt kit manufacturers. Tri-R, Van's, Stoddard-Hamilton, and Lancair have been invited.

Hint: To beat some of the traffic, show up early (like before 0700) and tell them you're working at the EAA Chapter 1000 booth in Hangar 1600. Of course, then you'll have to actually do that...

Copperstate EAA Regional Fly-In

Once again, the forces of Air-Zona have arisen, and ***Project Police Headquarters*** is concerned about the ability of **Mike "P5" Pelletier** at Chapter 1000 Det 7 in Tucson AZ to reign in these rebels by himself. To ensure that they are properly subdued, reinforcements are required.

Therefore, formation of a ***Project Police Tactical Assault Force*** has been authorized by the ***Project Police Kommandant*** for the purposes of subduing these rebels. The fly-in will occur on 8-11 October 1998 in Mesa Arizona. The ***PPTAF*** will commence operations on Saturday, 10 October 1998. Contact your favorite pilot and tell her/him that you must go! If you have an airplane, drag along someone who doesn't!

Assuming suitable performance at the Golden West EAA Regional Fly-In, we will again use the ***Poly Fiber*** booth as a central communications post for our ***Project Police*** activities.

Be sure to look up **Mick Myal**, publisher of ***Contact!*** magazine and Chapter 1000 member while you're there. **Avery Tools**, everyone's favorite supplier of sheet metal tools, will also be there selling their wares. This may be your easiest chance to meet the folks without going all the way to Texas.

McKillop Award, Part II

"And now, the rest of the story…." Paul Harvey was not involved in the presentation as far as I know, but I have managed to dig up some more details on the presentation of the McKillop award to ***The Leading Edge***, your favorite Chapter 1000 news-rag.

First of all, **Herb Carlson** was right. We were once again awarded with the **10th Place** award in all of EAA. The McKillop award is presented to the top 10 chapter newsletters. We're pleased with our placing, since a) it's no worse than we did last year, and b) it's a lot better that 11th place!

Now for the rest of the mystery. The **Sky Queen Neme-Babe** (aka **Tricia Sharp**) had been appointed as the Newsletter Editor's Representative for the purposes of the awards ceremony. However, her schedule was ripped from any semblance of her control once the filming started for the **Discovery Channel show** on *Nemesis*. **What?!** you say? That's right, the Discovery Channel is filming a 3 hour show on *Nemesis*, and Tricia says she expects the filming (taping?) to extend over a year. Watch ***The Leading Edge*** for further information on when you can see it.

Even so, Tricia is not one to shirk her responsibilities. Somehow she found **Tony Ginn** and sub-deputized him to participate in the ceremony. Tony was at Oshkosh in the middle of some big NASA TDY, and eventually got the award back to Rosamond. Even then, I had to harass his roommate **Dave McAllister** to deliver the plaque to TPS.

Look to see the way-cool award plaque at the next meeting. I'll be in Reno at the Society of Flight Test Engineers (SFTE) Symposium, but I will leave it in the capable hands of the ***Project Police Kommandant***.

- Russ Erb
Newsletter Editing Dude

Last Month's Meeting

EAA Chapter 1000
Scobee Auditorium, Test Pilot School, Edwards AFB
1700, August 18, 1998
Gary Aldrich, Presiding

Secretary MIA

Early in the morning of the day of subject meeting, members of the **Board** received the following e-mail:

"Guys,
Due to a dentist's appointment that I just remembered, I will be unable to attend the meeting tomorrow night.

MILES"

This message was cause for confusion amongst the board. Noting the fourth word of the body of the message ("dentist's"), we searched the ***Project Police*** database and found no indication that **Secretary Miles** has or ever had a DDS degree. Hence, we were left wondering who this dentist was, and why did Miles have to go to his appointment? We could understand if Miles had had a "dentist appointment," but this one befuddled us. Of course, we were hard pressed to notice any change from our normal operating state. Be that as it was, Miles never showed up at the meeting, and the following has been recreated from the videotape, since I forgot my notepad.

Schmoozin', Schmoozin', Schmoozin' in the Lou-ounge

Schmoozin' kicked off on schedule, with an appropriate supply of schmooze-inducing food and beverage. Guest Speaker and ***Project Police Officer*** **Charleen Beam** managed to find us on her first try. Maybe it was all of that raucous schmoozing. Maybe not.

Any way, we got all of Charleen's cool stuff into the auditorium and finally called a halt to the schmoozin' at precisely, oh, about 1740-ish.

Announcements

Inasmuch as **Bob's Rules of Order** allow for the dispensing of formalities, such an option was exercised.

Many aviation events are on the horizon, as already detailed at the beginning of this newsletter. Go back and re-read it if you need a refresher.

Mention was made of the Board proposal to try occasionally changing the day and time of the meeting as a service to our more far-flung and late working members. The first suggestion has been to hold a meeting on **Saturday, 14 November 1998** at something like 1000. Far-flung members can fly into Rosamond Skypark (L00), and take the complimentary ***Project Police*** Transportation to the USAF Test Pilot School for the meeting. Some sort of lunch would be held afterwards, possibly at TPS, Burger King, or even the Golden Cantina. We might even give those flying in a ride back to L00! A positive response was noted from those present. Of course, those weren't the people we are trying to accommodate!

Charleen Beam reported a **Chris Reeder** sighting. He was a guest speaker at the Santa Monica Museum of Flight's Aerospace Days, put on by the CAP. Obviously the Air Force is not keeping Chris busy enough at Pilot Training. Unfortunately, this event was not well publicized, and no time was available to form a team of ***Advanced Classified Kaleidoscopically-Trained Hegemonous Project Police Truth Protection Hooligans*** (***ACK-THPPTPH***) to ensure that no ***Project Police*** secrets were leaked to the general public. After all, if they want to know our secrets, they can pay their $15 and become a member of the Chapter and read them in the newsletter!

Visitors

A protracted search (57.3°) was made for visitors, but none were turned up.

Minutes

As the keeper of the minutes was watching a dentist go to an appointment, we didn't have any. We made do with what was printed in last month's newsletter.

Old/New Business

None to speak of.

Program

As mentioned previously, Chapter 1000 member **Charleen Beam** sneaked (snuck?) away from her job answering phones at **Aircraft Spruce & Specialty** early and fought the traffic from Corona to TPS.

For the first part of the program, Charleen spoke in her capacity as the only Chapter 1000 member present at the meeting who actually made it to **EAA AirVenture™ 1998** (formerly **Oshkosh**).

This was Charleen's fourth year to go to the big Oshkosh ShinDig, and she has yet to set foot in the Aircraft Spruce booth and sell a single bolt. Then again, they weren't paying her way. This year she served as a volunteer in the ***Flying Start*** booth, ~~strong arming~~ persuading pilot wannabes to "Stop Dreaming. Start Flying!" Like many other volunteers, Charleen implored us to consider volunteering somewhere during any trip to Oshkosh. Many have said that it enriched their whole AirVenture™ experience. Suggestions were heard for a ***Project Police*** booth to inspect for infidels. However, current transportation options for the chapter booth do not favor such an idea.

Charleen treated us to a whole mess of slides from her trip, including mostly people and airplanes (our kind of slides). She noted that the old Brown Arch entrance was re-labeled with the AirVenture™ name, but that the primary entrance was moved way down south to near the four big hangars.

With the focus moved back to Southern California, Charleen mentioned that she purchased a Cubby (homebuilt J-3 lookalike) about a year ago and hopes to have it flying sometime soon.

Many Aircraft Spruce catalogs were dispersed to the throngs, and Charleen showed us some cool new avionics that she had brought for display. An important inside tip: The prices shown for avionics in brochures and catalogs are controlled by contracts between the suppliers and the sellers. The contract says that the item must be **advertised** for a certain price, but it doesn't say it has to be **sold** for that price! Something about maintaining an image. Call and find out what price they'll really sell it to you for. If you call and ask for Charleen, and then tell her that you're a Chapter 1000 member, she'll probably be able to cut you an even better deal, and it's all approved by management!

Adjournment

The meeting was adjourned at sometime before 1900-ish, when many of the members transported themselves westward. Highly complex technical discussions were continued in a lively manner at the Formal Dining Room of the local base Burger King.

- Erbman
Second-String Pseudo-Secretary

The Prez Sez…

Have you made your Fall aviation plans yet? By the time you read this, the "Old Fashioned Fly-in" will be history (*or at least be very soon*) and the Edwards Open House will be right around the corner. I hope you enjoyed the former and I hope you will turn out for the latter...not only as a spectator, but also as a loyal and active Chapter member and/or ***PPTAF*** trooper. After the dust settles on ***Operation Desert Valet***, we'll be turning our attention to an experimental Chapter meeting (we are experimenters, are we not?) in November. The plan is to change the meeting time from Tuesday to Saturday. This should allow many more folks to attend that are otherwise occupied on the normal meeting night. The board is seeking your suggestions and recommendations for this meeting and your feedback afterwards. If the response warrants, alternate meeting times (and places) could become the norm (no, I don't mean **Norm**). The board is also seeking your body...(oops, not politically correct). Up to three Director positions will be up for grabs in this year's election. I'd encourage all members to consider participating in this leadership role. Contact me or any of the board members for more information on this important position. In the meantime,

Fly safe and check six!

- Gary Aldrich

New Member

The ***Project Police*** are being augmented by the Big Guns! We welcome **Paul Stein** who joins us via snail-mail with a New Member Information Sheet downloaded from "The Big Web Site." Paul is a CHP Sergeant from Santa Clarita who flies a 1974 Mooney M20F. We don't know much else about him yet, since I'm not sure I've met him yet. Even so, welcome to Chapter 1000!

A Journey of an Aerobatic Pilot

Several weeks ago, I was contacted by our Prez, **Gary Aldrich**, and given a direct order (I think he went back on active duty for a moment) to provide an update on my flying activities this year. I was enticed by the possibility of becoming a "detachment" in Northern California, if I accepted the mission. I was not given the option of declining. I'm not positive about this, but being a detachment is probably like being on the point in an infantry unit. (*You got a problem with that?*)

Five years ago, this July, I completed a Christen Eagle that took eight years to complete. After attending Oshkosh 1993, I began aerobatic training with an eye on competing in the California IAC (International Aerobatic Club) Contests. I was most fortunate in winning the first contest I

entered in the Sportsman Category. In the following years, I moved up to Intermediate and, then, to the Advanced Category. I quickly discovered that the Eagle is vertically and roll rate challenged at this level. So I decided to purchase an airplane that would overcome these shortfalls.

After much research on aerobatic airplanes, I ordered a new mount. In February 1998, I took delivery of a brand new **Zivko Edge 540**. The plane is American made by Zivko Aeronautics Inc in Guthrie, OK. The engine was built to my specifications by Ly-Con in Visalia, CA. For those that are not current on aerobatic planes, the Edge is a mid-wing monoplane that looks a little like an Extra 300S. However, it is 200 - 300 pounds lighter and has, in my case, 387 hp. The empty weight is 1160 pounds, and the roll rate is 420 degrees/second. The wings are made of carbon fiber, and have been static tested to +/- 23 Gs. The design G load is +/- 12 Gs. In short, it is one of the highest performing planes available in the world.

The next challenge has been to manage the transition to a quantum leap in performance. The take-offs and landings are easier than the Eagle (not the F-15 Eagle), but vertical point rolls, snap rolls, and rolling 360s are quite different. Also, the pulls and pushes are physically more demanding (+11/-6.5 Gs vs +7/-5 Gs in the Eagle). In order to minimize the learning curve, I have been training with some of the top coaches in the world. I have worked with **Alan Geringer** in Selma, CA for the last four years. In addition, **Sergei Boriak** and **Victor Smolin**, both world class Russian pilots, have conducted acro camps. Finally, I recently completed a one-week camp with **John Morrissey**, US Team Coach, and his lovely wife **Linda Meyers Morrissey**, a member of the US Team since 1984. These people have so much aerobatic and competition knowledge among them that it is scary.

With all of this training, I can now keep the plane within sight of the box. I even managed a first place finish at the Northern California Championships at Paso Robles. I also won the Advanced Freestyle flight at the Fond du Lac IAC Championships of the Americas which earned a medal. Next, will be a trip back to Texas to the US Nationals in September.

Well, I have probably said more than needed about the Edge and my flying. However, what is really rewarding to me is all of the interesting people one meets in this sport. Most come from professional backgrounds, are competitive in business as well as aerobatics, love to pull Gs, and enjoy life to the fullest. It is also neat to compete with women pilots (I remind you that the winner of the US Nationals in Unlimited has been a woman for the last four years, and another young lady has a great shot at winning the Sportsman Category this year). There is a lot of camaraderie in the sport, and when the flying stops, the socializing begins.

In closing, I am looking forward to bringing my plane to the Edwards Open House in October and meeting all of the members of Chapter 1000. Fly high and fly safe.

- Norm DeWitt
EAA Chapter Det 11, San Carlos CA

P.S. Gary, am I now a detachment? (*Yep, but you've got to share it with Ed--see below*)

Oshkosh Return and In-Flight Maintenance

I left here Sunday morning after a wonderful Oshkosh (I really enjoyed staying and working with custom parking and the secret area 51 on the field [*do the **Project Police** know about this?*]) and headed towards Jamestown, North Dakota. The flight there was of little consequence flying at 16,500 feet until I was within 60 miles of Jamestown and had to go down through a hole to fly under the clouds so as not to get stuck on top. When I got down to 500 AGL I was in the rain and mist and thank God for GPS. I made it into Jamestown with no problems and proceeded to walk inside and talk to the lady working the weather station. The weather lady informed me that the fuel guy was off on Sundays although he was just here to refuel two other airplanes, but that I had just missed him.

The passengers of the other two planes had called a taxi and were going into town for lunch and asked if I wanted to go along, so I did. When we got back, we watched the weather screen to see if the weather was going to improve enough to leave. It didn't, so we went into town for dinner and a hotel room. Hence the saying "If you have time to spare fly your own airplane." The next morning, we went to the airport and the weather screen looked better, so we all left, the ceilings being 2000' and visibility 5 miles. As I was flying towards Bismarck, I noticed I could see blue sky above so I moved up to 14,000 feet and could see over the system and several holes all the way to the ground so I proceeded on top for an hour, when the clouds moved up through a 20,000 foot plus layer and I had to go down under the system into the rain and low ceilings for 15 minutes at which time I moved back up to 16,000 feet. At this time, I was drying off the instrument panel and myself from the leaking canopy when I noticed the radio was dead. Since I had two hours to go and nothing else to do, I grabbed my tool bag, pulled the radio out, took it apart, and dried it out. After the second try at getting the water out I put it back in and it worked good as new. From there, I landed in Riverton, Arizona for fuel, went back up to 16,500 and over the Rockies to Battle Mountain, Nevada for fuel, and then direct to San Carlos and home.

The first time I told this story someone said, "You took the radio out while you were flying?" But let's look at it like this: 1) I had two hours of flying left, 2) the water in the radio is going to do damage the longer it is left in there, and 3) if I do nothing, I will have no radio, but if I take it out, I have a chance to fix it (so I did).

- Ed Dutreaux
EAA Chapter Det 11, San Carlos CA

Static vs. Inflight Thrust

(*Vance sent this in, and also submitted this article to Contact! magazine, so don't be surprised if you see it there. Just didn't want Mick Myal to think we're stealing from him--ed*)

How important is static thrust? That is a question that is kicked around almost as much as our old friend torque, and in many ways, it is a very similar sort of relationship. This sort of discussion probably got its major impetus among the ultra-light propulsion people, in a segment of aviation where it is a very important parameter. In classic propeller theory, no matter how much static thrust you might have, efficiency by their measure is still zero. From that you might try to make a case that all different engine propeller combinations are equally bad. When you look at propulsive power the number is thrust times speed, and at zero speed the POWER is zero, so the theoretical guys say it is not a valid point, and go back to their formulas. However, you folks out there waiting for your plane to start its takeoff roll, static thrust is what is going to get you moving.

While static thrust is very difficult to predict with classic approach methods, it is really quite easy to measure. You merely level up your airplane, make sure that the wheels are pumped up tight, and the brakes completely off. You then hook a suitable tension type scale (big fish scale?) to the tail, and fire up the engine. Is the magnitude of this number a measure of which is the best prop for your plane? Unless your design speed is down below 60 or so miles per hour, the answer is a loud **NO**. With a fixed pitch propeller, the design is always a compromise, and the best combination for flight performance will probably compromise static thrust. The big, flat pitch prop that makes all kinds of static thrust will probably over-rev your engine before you can get to your cruising speed. On the other hand, the prop that pulls the famous F1 race plane “Nemesis” up to almost 300 mph, undoubtedly results in a longer takeoff roll, and poorer initial climb rate.

Typically a fixed pitch prop designed for best overall performance will be limited in static thrust by two major factors. The first limitation will be that it will not permit the engine to develop full power at static or other low forward speed conditions. The propeller load will “bog down” the engine to the typical 2100 or 2200 static rpm. Looking at the power curve for your engine will show you that you are only getting about 60 percent of rated power at that condition. On faster airplanes where the design speed requires a high pitch for proper cruise and top speed, many parts of the blade will be stalled at the static condition (some people incorrectly call this cavitation, which is a similar phenomena encountered with boat propellers). When this happens, a large portion of your engine power is being used up just churning the air instead of making useful thrust. As you might expect, these problems are much reduced when you spend the money for a controllable pitch propeller.

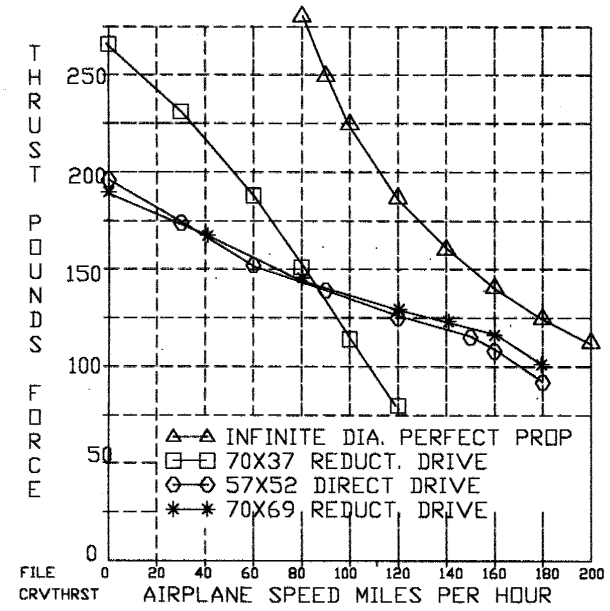
As I mentioned before, static thrust is very much like torque, in that you can sort of “gear down” your engine and prop for almost any amount of static thrust. This is how a 150 HP helicopter can fly straight up with over 1500

lbs. static thrust, and a Cessna 172 with a similar engine can only provide about 400 lbs. of static thrust. Monster propeller blades (like a 35 foot diameter helicopter rotor) with a gear reduction to keep the tip speeds at a reasonable number can make outrageous thrust at low speeds, but just try to cruise at 150 mph with one of those out front. Just the landing gear for that kind of installation staggers the imagination. Jack Cox described the Helio-plane (stepfather of the Helio-Courier) that had a very tall landing gear, but the prop tips would still strike the ground if you ever landed or took off in a level attitude. However, the flaps and thrust were so effective that one never got it into that attitude during rational operation (he actually stated that a test pilot deliberately tried to "tic" the prop with aggressive procedures but it was almost impossible).

On the other hand, the original powered hang gliders that evolved into the ultralight movement used direct drive props on the small chain saw derived engines that were in use at that time. These little snarling 2 stroke engines were most happy up in the 6000 to 8000 rpm range, where the tip speeds on props as small as 30 inches were snapping at transonic regions. Although geared engines had been around with the "big boys" for years, this is where the redrive (or the homely acronym PSRU) came into it's own in experimental aviation. If anything needed static thrust, it had to be these forests of tubes and wires with stall speeds down around 20 mph (fast as a man can run – with a bit of a head wind). Now where thrust numbers of 60 pounds had been pretty good, they were easily exceeding three times that amount. So what if that number goes near zero at 70 mph – that's illegal – and you could only do it in a dive anyway.

The rational selection for most airplanes is at a compromise position between these two extremes, and differs, depending on the kind of airplane you are designing. Using a fairly well anchored propeller performance computer program, I modeled an imaginary pair of airplanes using the same imaginary 60 bhp engine. This engine was assumed to be a rather modest, probably 4 stroke engine, developing max power about 3600 rpm. One airplane would be an ultralight class plane, where we will gear the engine down for a peak at about 2500, and use a 70 inch diameter prop. The other application would be a small clean sport plane that would do about 160mph with this power, so we shall run direct drive 57 inch diameter prop. Both cases assume a fixed pitch prop, properly sized for the engine package and application. This computed to be a 37 inch pitch for the 70 inch diameter for the slow plane, and 50 inch pitch for the 57 inch diameter in the direct drive "cleaner" plane.

The attached curve of thrust versus airplane speed shows the basic results. The top curve is for that impossible infinite diameter perfect propeller. This value also represents what force you could get with 60 horsepower with a perfect, no loss gear drive with a likewise perfect infinitely variable transmission. As you can see this curve goes off scale at the low speeds (actually to infinite force at zero speed) showing why a bulldozer with only 60 horsepower can push your house off it's foundation in low low gear at about ½ mile per hour.



Back to the real world, and the dreadful truth about propulsive efficiency. The big, slow turning prop definitely has the edge on static thrust, and would yank that big winged plane into the air quite smartly. However as the speed builds up, you start running out of pitch (but of course the drag has slowed you down before you got there anyway). The smaller prop is certainly down on static thrust, and it would be nice to accelerate down the runway a bit more briskly. However the package is still doing fine a bit over 100 mph, where this kind of plane would climb best, and is doing quite well in the 160 mph top speed range (about 110 lbs versus about 140 lbs theoretical or roughly 79 percent efficiency – not bad for a small diameter prop). Neither of these systems would perform well on the other airplane, but each does its assigned job quite satisfactorily. Likewise, neither of these planes could probably lift that infinitely variable in diameter, pitch and blade area prop – even if such a thing existed

Now the PSRU (I don't know why but I dislike that acronym) enthusiasts will say "well if you geared the engine down and used a bigger prop on the fast plane it would do even better". So we went back to the model and sized a reduced rpm at 70 inches diameter, and the pitch worked out to about 69 inches. With that steep pitch we narrowed the blade area so the engine would not be hopelessly "bogged down", and reran the model. This bigger prop actually produced a little less static thrust than the smaller prop. That steep pitch resulted in the blade being stalled almost full length, and ate up engine power without improving thrust. It was only when the speed was increased to about 80 mph that the larger disk area started to show increased efficiency. At the climb, cruise, and top speed, the larger prop got perhaps 2 percent improvement from the cost, weight, and complexity of the added reduction drive and larger prop. Of course, if you are willing to go the bigger "bucks", a controllable (i.e. constant speed) prop will give you even better thrust over the entire range, and also let you set a sort of "overdrive"

economy at cruise. Of course you will have to save a lot of gasoline to pay for that baby.

- Vance Jaqua
EAA Chapter 1000 Det 8, Camarillo, CA

Trailing Edge Cutoff

(*This e-mail was in response to a question about why the One-Design Airfoil, covered at http://www.eaa1000.av.org/technicl/onedesaf/1desaf.htm, has a cutoff trailing edge*)

NACA did a bunch of TN's in the late '40s and early '50s (in the TN 3000 to TN 4999 range) on airfoils including trailing edge cutoff. I did a lot of studies of the TN's including the cutoff.

The cutoff affects the boundary layer in many ways. The biggest positive effect was to make the separation point stay in one location. This (as I remember) reduces variations in the pitching moment coefficient with velocity (Reynolds Number) and can extend the angle of stall. In thin airfoils (I think) at higher subsonic Mach numbers, it can extend the laminar flow because the cutoff gives a pressure distribution that encourages the turbulent flow to "flow" faster (kind of a suction).

The nice thing is that there is no drag penalty when the cutoff thickness was less than the combined upper and lower boundary layer "momentum thickness." Of course this is Reynolds Number dependent.

I tried to get Bell Helicopter to use a cutoff on the trailing edge of rotor blades. It could provide an easier way to get strength and stiffness in the T.E. Also on the UH-1H 21-inch chord blades, the trailing edge was difficult to keep straight with the chordline during bonding. It wanted to act like an aileron being either up or down. This made it difficult to get blades to track together.

Standard airfoils can usually have 5 percent chord removed and never miss it from a performance standpoint.

One of the Italian engineers that worked at Bell has been credited with the boat tail design on racing cars (starting in Europe). This was for stability at the high speeds where the previous "streamlined" designs would be unstable with changing wind direction.

- Lee H. Erb
Chap 1000 Det 5, Arlington, TX; Chap 34

New Pilot Down Under

Hi Russ

Thanks for the newsletter - it makes interesting reading.

I have a query regarding the latest issue (August '98). In it I found the description of the talk given by Bob Waldmiller very interesting and I mentioned it to our editor of our "Western Flyer" and he expressed some interest. Is it possible to reprint this in our magazine and if so, could you e-mail an electronic copy of this part so it saves retyping? (*Done.*)

While I am about putting this e-mail together I guess I should give you a bit of news from the far flung part of the EAA Chapter 1000 'empire'. Firstly I have now managed to get my Private Pilot License which I got about a month ago. I had a couple of previous attempts since 1994 to do this but things always seemed to get in the road of progress. This time, however, I had no real excuses as I had the time and the money at the same time (plus a very understanding instructor). Basically I went from pre-solo to a full private license between the beginning of April to the end of July and that included time off for two trips to China and a couple of weeks while my instructor was away. I went solo in a Cessna 150 then flew a 152 and 172 but did all my navigation exercises in a Piper Warrior so I have had a bit of variety.

The other main news is the fact that I am now part owner of an aircraft (airplane to you). It is a 'rag and tube' English designed, three seater, 1950 Auster J1B with a 130HP Gypsy Major engine. I will send a photo by 'snail mail' to show you what it is like - it is no speed demon as it has a cruise of 85 Knots but it should be good for short field work as is has a stall speed with flaps out of 25 Knots. The aircraft was at a farm about 100 miles south of Perth and was in flyable condition but did not have a current maintenance release so we had to get a permit to fly it up to Serpentine. We managed to get it checked out and had a couple of short flights last Sunday (30th. August) so it was an interesting day until one of the brakes failed so we had to give it away for the day. All I want now is a taildragger endorsement so I can fly it. Needless to say the work on my Zenith Zodiac has been put on hold for a while.

The other major news from 'down under' is the (good) news that we are to get an Experimental Category in Australia. The legislation has been passed and it is due to come into force on the 1st. of October this year although some of the administrative rules are not yet finalised. We have been waiting for this for a lot of years so it will be welcomed by all.

Keep up the good work and cheers to all.

By the way - how is my Chapter 1000 badge getting on? (*Gary?*)

- Graham Byass
EAA Chapter 1000 Det 10, Perth, Australia

Source For Biodegradable Cleaners

The following e-mail was received here at ***The Leading Edge***:

Mr. Erb,

I was browsing the Internet and found your information on d-limonene based cleaners. Our company specializes in these products. In fact, for pure solvent material, our price per gallon is only $8.00. We sell from 5-gallon pails to 55-gallon drums to bulk orders. The name of our product is PEELOLINE. We also custom manufacture other variations of this product (i.e. with emulsifiers, etc.).

Please contact me at vtech@texas.net if you have any questions. Our web address is **vtech.home.texas.net**.

Sincerely,

Brad Varley

Buck Rivetz' Web Page Review

Project Police Det <DATAMASKED>

"We're here to help!"

Target for the Month:

GTE's DUATS
URL: http://www.skycentral.com
Date of Review: 5 July 1998

Well here it is, well into the Summer flying season and the usual variations of the weather are not far. Fires in Florida, storms and flooding in the Northeast, Fog in Northern Cal, and the usual hot and windy desert in the Lancaster area. So...what's that got to do with the web review this month? How about a visit to the GTE DUATS site?

Let's first try the access, which was located from the infamous EAA Chapter 1000 Web Site. Click on Weather Information and you're presented with about six different Weather information sites. I tried Aviation Weather "dot" com but I thought different upon gazing at the disclaimer "The information available here shall not be used for flight planning or other operational purposes." EEEK! No updated weather (they do have some really cool weather map graphic depictions)? "Where shall I go?" the author exclaimed. Why, to the GTE DUATS (Direct User Access Terminal Service) site.

DUATS was originally devised as a Telnet site (accessed through one of the early modems) for use with your Radio Shack TRS-80 computer. You might have even used your Commodore 64 or an old 286 sitting around the local FBO. The world has changed and with it technology and the sheer volume of accessible data. Although this review is geared toward the Web access of DUATS, you can still have that original feeling of accessing DUATS through Telnet (direct dial in) and as a bonus offer, I'll discuss "Cirrus" here in a bit.

The GTE site is accessed through http://www.skycentral.com and leads you to the GTE SkyCentral home page. You'll find some links to several advertisers such as Raytheon (always wanted to order a new Beech), Cessna, Trade-A-Plane, Van's Aircraft, and of course, GTE Web Engineering (if you have a web site you need constructed).

On the right column of the screen you get to the good stuff, The Fight Ops[sm] section and the GTE Preflight[sm]. To get right to the guts of the site, the DUATS information, a first time user has to run the wickets of the obligatory registration screen. If you follow the "FREE Preflight Web Access to GTE DUATS..." bookmark, it will take you to the bottom part of the page where you will find the GTE PREFLIGHT section. Of note here is the browser requirement for your desktop environment. Don't use MS IE 3.01. For some reason you can use 3.0, or 3.02, but not 3.01. Other acceptable browsers are Netscape 3.0 and AOL 3.0. The site requires secure downloads and IE 3.01 will not support these requirements. For this application, Telnet is NOT required, as was required for direct access to DUATS. Click on the nifty DUATS graphic, the one that says "Click Here", and you are instantly (or as instantly as a 28.8 modem will get) transported to the basic GTE DUATS screen.

You'll find the screen uses frames with the top portion containing the basic navigation and function box and the lower area containing an aeronautical chart segment. This is also where you find your search results.

Now, in order to use this to slay this monster there's a couple of things you need to do. First, click the "On-Line Registration" button if you're a first time user. The lower screen will present a web form for you to fill out all the pertinent personal information. Throw in your first name, middle initial, last name, address, pilot certificate number, and then make up a 6-8 character password and an authentication code. Jeez, just like the military! Now enter some aircraft information, including registration number, true airspeed (support documentation says you can enter "SC" for "Speed Classified" which works nicely for the ***Project Police***), home base, type, equipment code, and color of aircraft. You need to enter at lease one aircraft as the GTE database will go looking for a default.

The system will puke at you if you have entered any information the system doesn't recognize such as aircraft type. When entering the equipment type, don't enter "\" prior to the equipment alpha code. It's not labeled but that's the way it's done (per GTE DUATS tech support).

Now that you've successfully navigated the registration and received your Access number (remember it's an 8-digit number, not your last name), you can press forward into the basic reporting functions of the web site.

The web version of DUATS gives you the option of about ten different forms used to submit report criteria. A laundry list of the forms it contains is:

Standard Wx: Route
Standard Wx: Area
Outlook Wx: Route
Outlook Wx: Area
Abbreviated Wx: Location
Abbreviated Wx: State/Coll
Abbreviated Wx: Route
Abbreviated Wx: Defined Radius
Encode/ Decode
Flight Planner
File Flight Plan

As you can see, most of the above forms are pretty self-explanatory. The basic procedure here is to select one of the reports you want to generate and click on an open button. A form appears in the lower frame box, in which you enter a variety of parameters. I had a long drawn out battle trying to get DUATS to accept the Flight Planner

form, when I gave up and decided there was a better way the safety wire this thing (More on this later).

Moving ahead, the basics are to just fill in the form as necessary. Now, digressing back to the maintenance of the user's account, you can change you profile through the upper frame page by clicking on "Profile Maintenance." DUATS will allow some cool options here. It will accept additional aircraft (up to 50) and up to 100 pre-defined routes. This is needed while filling out report submittal forms.

If more than one aircraft type is loaded against your account, you will be given a pull-down selection box for the aircraft you will be flying during the reporting periods. The same goes for routes. If you want a report on a specified route, you're given the option of using one of your pre-defined routes. DUATS also gives you the option of selecting FAA gobbly-gook language or the easier to understand "Plain English", or both.

In several of the abbreviated report forms you have the option of selecting output reports to downsize the report length. To do this, just <CTRL><ENTER> on any of the following:

Surface Observations (METAR)
Weather Trends (TE)
Terminal Forecasts (TAF)
Winds Aloft Forecasts (FD)
Pilot Reports (UA)
Radar Summaries (SD)
NOTAM Summaries (NS)
FDC NOTAMs (FDC)
NOTAMs-D (NO)
Area Forecasts (FA)
SIGMETS (WS)
AIRMETs (WA)
Amended Severe Wx Formats (WW-A)
Center Weather Advisories (CWA)
Convective SIGMETs (WST)
Flow Control Advisories (CWA)
Hurricane/ Tropical Depressions (WH)
Severe Weather Outlooks (AC)
Severe Weather Warnings (WW)

Any or all of the above can be selected as report formats.

Now that you have entered information on the form and clicked on the <OK> button, you will see the selected form appear in the "Completed Form(s)" subscreen of the upper right frame. Click <Send> and your information is gone.

After a short wait your requested info is presented in the lower frame, which can be printed using a standard printer.

The site appears to work well, aside from the appearance that it's very error-sensitive. If you try to enter the Flight Planning form with an aircraft that DUATS doesn't recognize, you're pretty much out of luck. At least the Telnet version of DUATS was pretty much interactive. If you read the output file, it appears that the Web version of DUATS processes the information like an interactive version would. The same prompts and inputs can be read if you generate errors. Otherwise, a successful output file is readable without much effort.

Now for the bonus section. GTE gives you the option of downloading a free version of Cirrus, the Windows front-end to DUATS. The 3.1 Mb file took about 20 minutes to download and install on the C:\ drive under the folder Cirrus. It's a straight forward install as long as you have installed software before. You will need to know the COM port your modem is running on and the baud rate used.

Cirrus allows a direct logon to DUATS through the desktop modem and permitts the same report functionality of the Web version. However, you now have the option of using the interactive screens (which look like the old DOS or UNIX screens) and really using DUATS the way you want. Now you can use the Flight Planning feature by configuring the criteria for each aircraft you use.

My advice: Take the time to down load Cirrus and use both applications to make the most of your DUATS experience.

Although not the easiest web application to get the hang of, it appears that the information DUATS presents overcomes the error-sensitivity and general difficulity of learning the peculiar bugs of the software. If you're looking for eye-candy here, better look somewhere else, otherwise, if you're looking for updated weather info, or submitting you flight plan, you're in the right place.

As usual, I don't waste my time in the useless wastelands of Internet domains, and neither would I recommend that the minions of Buck trespass over those same electronic lands. I hereby grant this site

APPROVED!

- Buck Rivetz

Update from Buck (Buckdate?)

Site: ***Aircraft Spruce & Specialty***
http://www.aircraft-spruce.com

After finally placing several orders with AS&S, I have been able to really use the Customer Support Order Tracking functionality resident within the site.

You reach the site through the "Customer Support" hyperlink where you are prompted for your customer number. As previously reviewed, you first need to register and once that's done, you have access to your orders placed either through the web online or over the phone.

As I still like placing orders over the phone (you get a body on the other end instead of "item not found" or some other goofy non-descript error), but for tracking the order, it's great.

Once your customer number has been entered it gives you a series of orders with the respective Order #, Date Shipped, a Ship-To Address, and the Status.

Click on any of the Order numbers (dynamic hyperlink on the left side of the table), and additional info is presented. For your purposes, the Tracking #, Invoice #, and the method of shipment is given, as well as a list of

open items on the order (Quantity, Part Number, and description).

Just an update, but it's worth a try. Next time you have an order stuck in status-limbo with AS&S, try the Customer Support site.

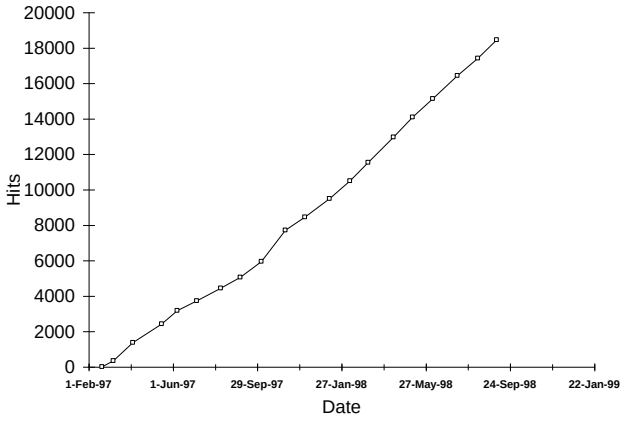
Web Site Update

Checking on 5 September 1998, the hit rate counter stood at **18448**. The hit rate holds reasonably steady at 39 hits/day. See the graph of the activity below.

In an effort to remember who's who, I've added the listing of Chapter 1000 Board Members, previously published in the January 1998 edition of ***The Leading Edge***, to the "Meet Our Chapter Officers" page.

An e-mail we received: "Just a quick note to thank you for all of the great info on your Chapter 1000 web page. My brother and I made a pair of the standardized work tables and they are great. I also swiped your proposed [Bearhawk] color scheme images, and blanked them for planning my own paint scheme.

If the Project Police are ever in the Cordova area, I will be sure to have refreshments ready. Even went so far as to hang the required motivational picture in my work area. - Del Rawlins"



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

For those of you out there doing your own web sites, I think I've finally found an HTML editing tool that I like. It's called HomeSite 3.01, and is available at http://www.allaire.com/products/homesite/index.cfm. This is a code-based editor, so it doesn't add a lot of those problems you get with WYSIWYG editors. You can download an evaluation copy from their web site.

- Russ Erb, Webmeister

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.

Quotes from the Quote-meister

Our own **Norm Howell** has done it again. Another pithy quote has been entered into the Chapter 1000 archives. This one showed up in the August 1998 *Sport Aviation* on page 70 in **Ed Kolano's** review of the Berkut. To wit:

> Perhaps its landing pattern personality is best expressed by Norm Howell, USAF test pilot, *"It's very user friendly once you adapt to it."*

(We were going to slam Norm for still calling himself a USAF test pilot until I spoke to Norm and found out that this exchange with Ed Kolano took place at Oshkosh '97, at which time Norm still was in the USAF.)

Chapter 1000 Calendar

Sep 11-13: EAA Chapter 1073 Wings On Air Fly-In. Truckee Tahoe Airport (TRK), Truckee CA. (530) 562-0617

Sep 12: EAA Chapter 49 "Just An Old Fashioned Fly-In," General William J. Fox Field, Lancaster CA. (805) 948-0646

Sep 12: EAA Chapters 1000/49 Young Eagles Rally, 8:00 a.m., General William J. Fox Field, Lancaster CA. (805) 256-4829

Sep 15: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (805) 490-1476

Sep 25-27: Golden West EAA Regional Fly-In, Castle Airport, Atwater, CA

Sep 27: Bohunk Fly-In, Bohunk Airpark (805) 942-7080

Oct 3: Edwards AFB Open House and Airshow

Oct 7: EAA Chapter 49 Monthly Meeting, 7:30 p.m., Sunnydale School. 1233 S. Ave. J-8, Lancaster, CA. (805) 948-0646

Oct 8-11: Copperstate EAA Regional Fly-In, Mesa AZ

Oct 10: Flyout to Death Valley-Furnace Creek (805) 943-9343

Oct 13: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., Edwards AFB. Test Pilot School, MOL Room (805) 490-1476

Oct 17: EAA Chapters 1000/49 Young Eagles Rally, 8:00 a.m., General William J. Fox Field, Lancaster CA. (805) 256-4829

Oct 20: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (805) 490-1476

Nov 4: EAA Chapter 49 Monthly Meeting, 7:30 p.m., Sunnydale School. 1233 S. Ave. J-8, Lancaster, CA. (805) 948-0646

Nov 7: Flyout to Santa Maria (805) 943-9343

Nov 10: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., Edwards AFB. Test Pilot School, MOL Room (805) 490-1476

Nov 14: EAA Chapter 1000 Monthly Meeting, 10:00 a.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (805) 490-1476

Nov 14: EAA Chapters 1000/49 Young Eagles Rally, 8:00 a.m., General William J. Fox Field, Lancaster CA. (805) 256-4829

Dec 2: EAA Chapter 49 Monthly Meeting, 7:30 p.m., Sunnydale School. 1233 S. Ave. J-8, Lancaster, CA. (805) 948-0646

Dec 5: Flyout to Apple Valley (805) 943-9343

Dec 12: EAA Chapters 1000/49 Young Eagles Rally, 8:00 a.m., General William J. Fox Field, Lancaster CA. (805) 256-4829

Dec 15: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (805) 490-1476

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 Fletch Burns 760-373-3779

To join Chapter 1000, send your name, address, EAA number, and $15 dues to: EAA Chapter 1000, Gary Aldrich, 42370 61st St. W, Quartz Hill CA 93536. Membership in National EAA ($40, 1-800-843-3612) is required.

Contact our officers by e-mail:
Gary Aldrich: gary_aldrich@pobox.com
George Gennuso: pulsar1@qnet.com
Miles Bowen: miles_bowen@ple.af.mil

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

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

ADDRESS CORRECTION REQUESTED

THIS MONTH'S HIGHLIGHTS:
REGULAR MEETING 15 SEPTEMBER AT TPS
A WHOLE MESS OF FLY-IN EVENTS
NORM DEWITT'S AEROBATIC JOURNEY
STATIC THRUST MEASUREMENTS