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 *October 2003*

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:

Hey, Where'd You Get Those Tires?

Speaker: Mike Lamb
Tuesday, 21 October 2003
1700 hrs (5:00 PM Civilian Time)
USAF Test Pilot School Auditorium
Edwards AFB, CA

A long, long time ago in a land far, far away (if you consider Palmdale far away) a lonely homebuilder was working on his KR2. As time passed he eventually got to a point in time where he was installing the landing gear and needed to get some wheels and tires. He took some careful measurements and came up with what would be the perfect size tire for his project, and off he when to get some. He looked high, and he looked low. He called far and he called near. He looked in every catalog that he could get his hands on, but...the perfect tires could not be found. So, he did what all of us homebuilders eventually do, he made his own.

What I'm talking about here sports fans is "Lamb Tires". I have them on my airplane and I'll bet a lot of you have them on yours too. For this evening's meeting we are going to have **Mike Lamb** tell us the whole story of how Lamb Tires came to be. This is one of those very unique and interesting stories and one that you will be telling to your grandchildren. It brings back the good old days when if you wanted to do something you just went out and did it, and nobody sued you. You might remember Mike from last year when he came out and gave us a talk on building his Harmon Rocket (*no, I missed that meeting...*).

So if you want to get in on the ground floor and get the real story straight from Mike himself, be at the TPS auditorium next Tuesday at 1700 hours (5:00 p.m. civilian time). As always we will have chips, dips (some people call them hours devours) and the all important chocolate chip cookies. After the presentation there will be the sumptuous fare at the BK Lounge where the world's problems will be solved. Hopefully someone will write down the answers so we don't have to do it again next month.

- George "Knife" Gennuso
Vice Kommandant

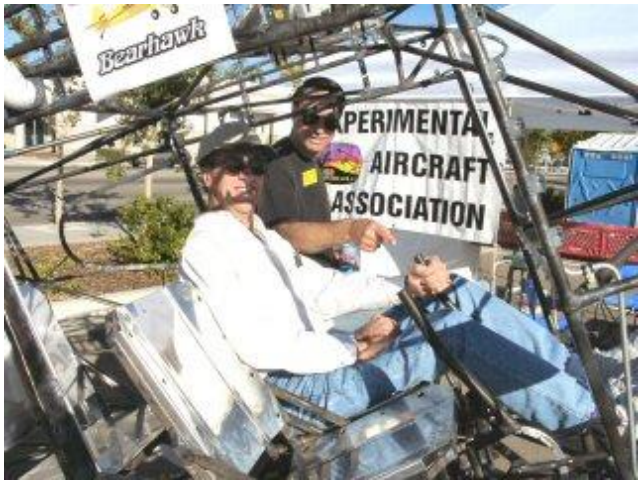
NEWS FLASH: **Pat** and **Carol Fagan's Bearhawk** wins **GRAND CHAMPION** at **Copperstate**!!!! See http://www.airbum.com/articles/BHatCopperstate03.html

Last Month's Meeting

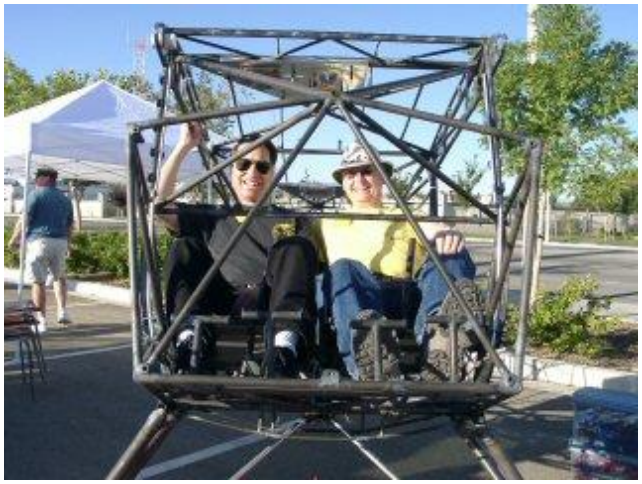
EAA Chapter 1000
Aerospace Walk of Honor Street Faire
Boeing Plaza, Lancaster CA
20 September 2003
Gary Aldrich, Presiding

By order of the **Kommandant's wife**, our regular monthly meeting was superceded by the chapter's attendance at the annual **Aerospace Walk of Honor Street Faire** held at "Boeing Plaza" in beautiful downtown Lancaster. The event was attended by the local aerospace firms of Northrop Grumman, Lockheed Martin and Boeing, as well as many USAF organizations from Edwards AFB.

On duty were the **Kommandant**, **Oberstleutnant Aldrich**, **Vice-Kommandant "Knife" Gennuso**, **Kent "Troxmeister" Troxel**, **Bill "Tex" Irvine** and **Russ "Erbman" Erb**. Russ brought the **Bearhawk** fuselage for display, which was enjoyed by youngsters of all ages, many seen making what passed for airplane noises. Unfortunately, some noises were suspect as hot link sandwiches were being sold nearby. **Jean Harband** also graced the chapter booth and sold aircraft-theme shirts for "**All 'Bout Airplanes**" (*you can also contact **Mrs. Kommandant** to find out how to get your own*).

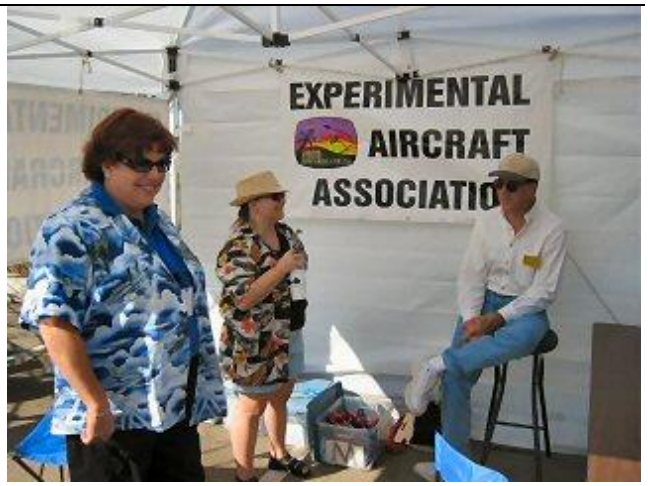


During the pre-show setup, "Tex" Irvine successfully identifies the Bearhawk control stick...after a little help from the Vice Kommandant. In his defense, "Tex" claimed that since he spent all of his time in Cessna 310s he was looking for a yoke

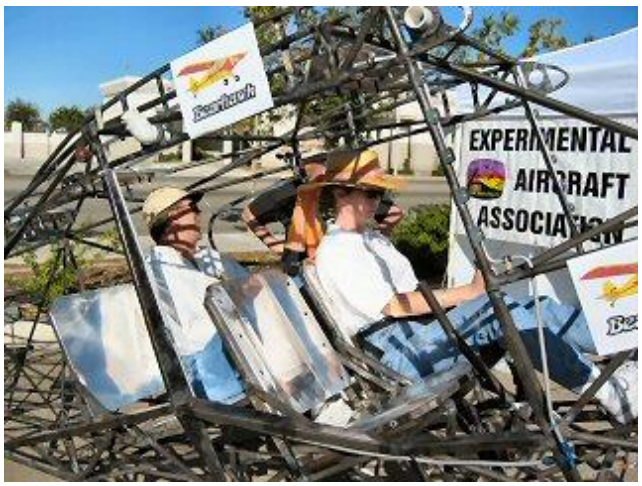


The Kommandant and Vice Kommandant try on the Bearhawk fuselage for size. They were heard mumbling something about "suitable for Kommandeering for critical *Project Police* business"

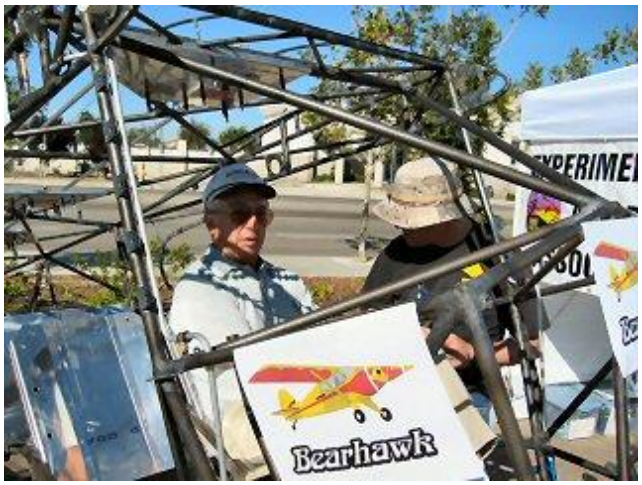
The sign says "The Sky's The Limit", and "Troxmeister" looks up to determine if that is true. Meanwhile the Kommandant and Vice Kommandant ponder how to get the water into the neck kool-band



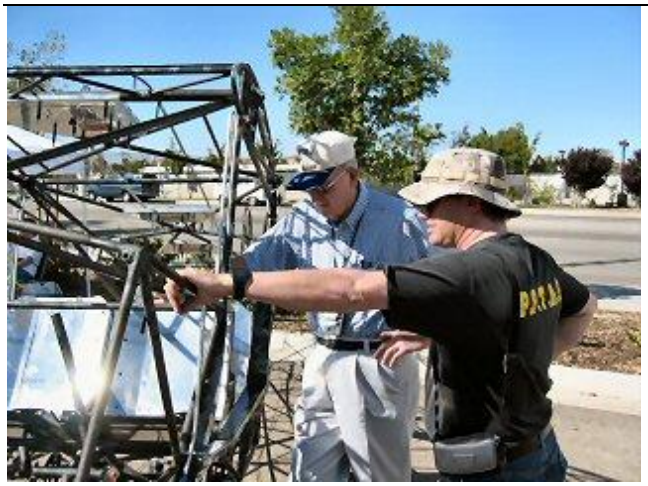
Aerospace Walk of Honor Grand Poobah Anne "Mrs. Kommandant" Aldrich checks out the Chapter Booth Mk II Mod 0 and finds it suitable, while Jean Harband tries to convince Bill Irvine to buy a shirt



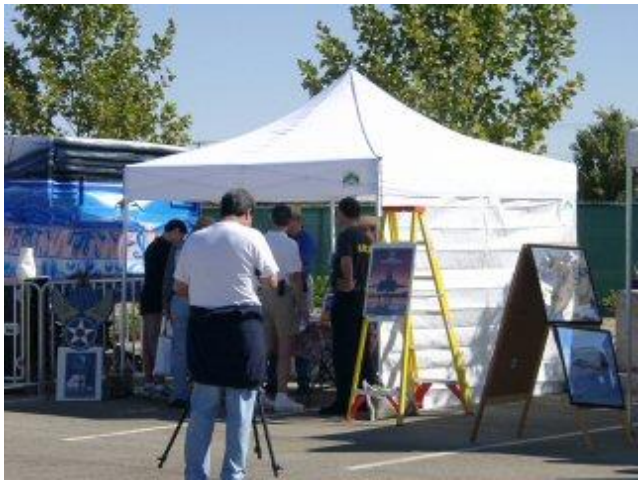
Leigh Kelly takes a break from the crowds at the Air Force Association booth to take Bill Irvine "for a ride"



Bob Hoey, world famous X-15 Flight Test Engineer and BD-4 builder makes an inspection of the Bearhawk and finds it suitable

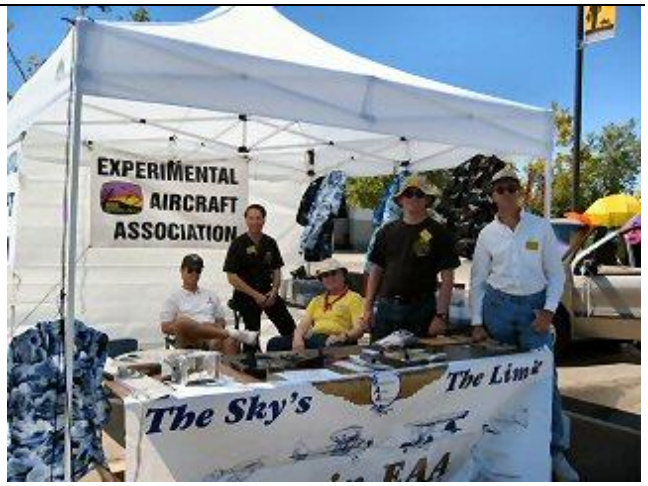


Fitz Fulton, world famous as "The Test Pilot's Test Pilot", continues the celebrity inspections of the Bearhawk



"Troxmeister" and "Knife" sneak away to make an unannounced inspection of the Air Force Association booth

Don't you just want to hang out with these guys? The *Project Police* do their best to stave off dehydration



The Kommandant takes his seat for a well deserved rest and wonders how much longer until he can declare "Victory!"

The alleged intent of our presence was to promote the EAA "Young Eagles" program, and I am pleased to report strong community interest. All brochures were distributed. Not only that, but we ~~unloaded~~ handed out a large number of aviation magazines, supplied courtesy of **Frank Roncelli's** aviation magazine disposal service. It is encouraging to observe the satisfying combination of Old Buzzards and Young Eagles. All of us had a great time talking to young men and women about our love of airplanes and flying, and discussing the opportunity for them to share in this dream.

The event also marked the operational debut of the chapter's high-tech "Easy-Up" tent, which replaced the world's most over-engineered wood booth which we parted with last year at this event with mixed emotions (ranging from glad to elation). The "Easy-Up" was test-flown the week before during the monthly Board of Governors meeting (*which is like the Board of Directors meeting, only different*) in the back yard of the **Kommandant's** palatial high desert estate. Pilot reports indicated good handling qualities and ease of operation. Stowing the cover was accomplished without incident with minimal reference to the instruction sheet, and without damaging either the tent or storage bag. The Board Meeting also saw the introduction of Flying Dog brand "Tire-Bite Golden Ale" beer (*see why you should be on the board?!*), which was promptly voted on as the official chapter beer. (see website: http://www.flyingdogales.com/FlyingDog_home.html). "Cut the leash!"

On termination of the event at 1400 hours, the **Kommandant** declared "**Victory**" and your intrepid advance party ceased operations. They wheeled the Bearhawk fuselage down a dirt road (for what passed as an off-field landing test) and onto the trailer graciously supplied by **David McAllister**. The "Easy-Up" was again successfully stowed without damage, passing the crucial field test of using it while sober.

- Kent "Cobra" Troxel
Secretary

Kommandant's Korner

Greetings fellow sport aviators! This month's column is, indeed, bitter sweet. Let's do the "sweet" stuff first.

I think all involved would agree that Chapter 1000's presence at the Lancaster Aerospace Walk of Honor Street Faire was awesome and very well received. The first flight test of "Chapter Booth, Mark II, Mod 0" was a resounding success, though only a portion of the crosswind envelope was explored. "Erection" took only two ***Project Policemen*** and only 10 minutes or so. (Don't go there...all the jokes have already been made.) The skeletal Bearhawk was a big interest-getter, configured with seats and functional stick and rudders. Many of the visiting citizenry were heard making appropriate airplane noises from within the cockpit; including such legendary aviators as **Gordon Fullerton**, **Fitz Fulton**, and **Bob Hoey**. ***PP*** **Troopers Erb**, **Gennuso**, **Irvine**, and **Troxel** were the primary crew with occasional visits from other Chapter members during the day. Further testing of the Booth is warranted. The procurement specification lists aerial deployment in Chapter Aerial Assault Vehicles as "desired". This of course will require the development of a new type of anchoring system. An RFP will go out soon to the Chapter for design and manufacture of such a system that, according to spec, will be required to weigh almost nothing until deployed. When installed, it must secure the Booth against the typical raging desert winds. "**Unobtanium**" is the suggested material, though suitable substitutes will be equally evaluated. Submit your ideas to anyone on the Chapter Board. For pictures of the successful operation, look elsewhere in this issue.

And the "bitter"...

In case you haven't heard...and couldn't fathom the persistent wailing coming from the Quartz Hill area, the mighty **Fightin' Skywagon** was involved in an "incident" that will keep her sidelined for a while. I don't wish to bore you with the gory details here as I prefer to keep an "upbeat" tone to the newsletter. Suffice it to say that no one was injured and the insurance company will cover the repairs. Never fear, I'll be regaling you with further aerial adventures in the not-to-distant future. In the meantime, I'll be catching up on all the little projects in the hangar and ticking off items on the honey-do list.

Don't forget the Edwards Open House and Airshow coming up the last weekend of the month. Chapter 1000 has, again, been "non-invited", but your **Kommandant** will be participating as tow pilot for **Dave Lazerson's** Glider Aerial Demonstration in the show. If you get out to the event, look us up.

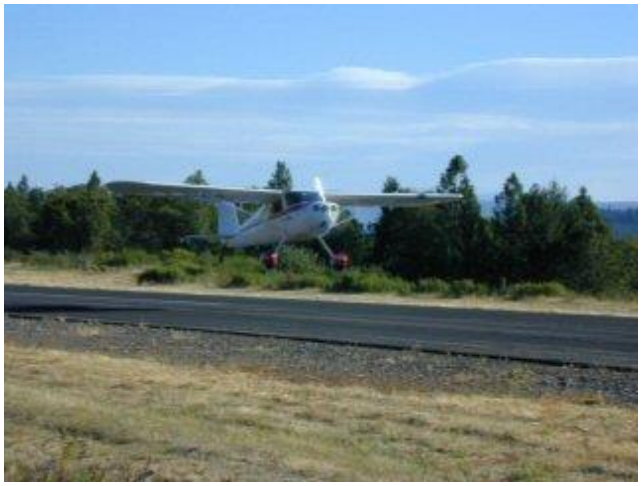
Fly (and taxi) Safe and Check 6

- Gary Aldrich
Kommanding

Tina Visco Represents The *Project Police* At Cessna 120/140 Fly-In

Below is photo of my landing at Georgetown, CA for the Cessna 120/140 fly-in. 8.8 hours of flying this weekend (6-7 Sep 03) with landings at 6 airports. What fun!

- Tina



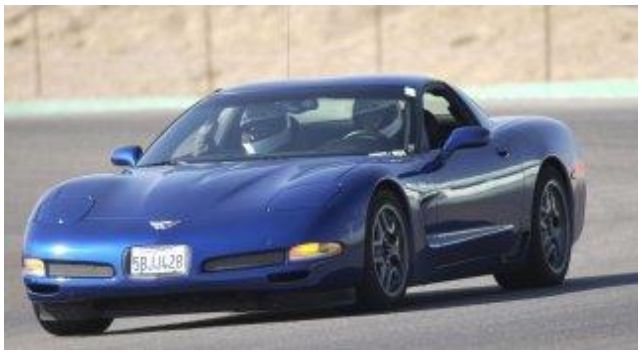
Gail Rages At Willow Springs!

Hi everyone,

Today I got a turn seeing what the 'Vette could do--amazing! My first time on the track and I'm still grinning--saw a top speed of 120 on the front straight! The attached picture shows me and Doug, brave soul, on my first laps around the course following the leader--didn't throw up. Doug says it's not a lot different from his day job...trusting someone else to do something he knows he can do better (yeah right :))

I watched Doug test the automatic control systems on the car--quite the ride as a passenger--they seemed to work though as he didn't break the car. Don't want to scare you mom, but we did see some folks run off the course that should have known better how not to...Really the only bad result is filling the car with dirt. There is a guy that says he's still got dirt in the car and he ran off the track 2 years ago. (Unlike NASCAR, the walls are real far away from the track and we're going a whole lot slower.)

Come on out and we'll give you a ride!



- Gail & Doug
Check 12!

(Not So) New Member

It has become apparent that the ***Project Police*** offices are in need of "**transformation**" just like Air Force Materiel Command. We recently uncovered the "New Member Information Sheet" of a ***PPO*** who joined us back in June 2003 which was never mentioned in this space.

This ***PPO*** would be **Brad Knapp**, another one of our detached members, living in Carmel Indiana with his wife **Delilah**. Brad ran across the Chapter 1000 web site and noticed the name of your **NLE**, who happened to be a USAF Academy classmate of his. He contacted us asking if we had a detached member program. After hearing of our world-wide detachments, he promptly sent in his money and signed up. Now as soon as he submits an article or something for publication in the newsletter we can assign him a Det number.

Brad's day (night?) job is flying as a pilot for UPS on their 757s and 767s. He still serves our country as a KC-135 squadron commander in the Air Force Reserve. In fact, he's been mobilized for all but five months since 11 Sep 2001.

Brad lists his projects and interests as an RV-8 (not sure if he is building or just wants one) plus anything aluminum in construction and aluminum aircraft structures.

Welcome (finally) to the ***Project Police***, Brad!

Why You Should Wear 100% Cotton...

(*from the Bearhawk e-mail list last winter*)

Alternate titles:

1. Less than successful welding techniques
2. Bearhawker on fire!
3. Don't Panic!
4. Years of Emergency Procedure Training Pays Off
5. Uh...I need a new sweatshirt...
6. Things Your Spousal Unit Would Rather Not Hear About But Will Anyway
7. Bearhawk Safety Meeting
8. Public Humiliation Shall Be Your Punishment

(Explanation of #7 and #8: In my experience in the Air Force, when you do something really stupid, especially when no one is injured and no aircraft are lost, your punishment is to stand up in front of your squadron at the next safety meeting and tell them what you did, in hopes that others will learn from your stupidity)

Well, I've done it again--created some excitement in the shop...

I've been welding on the rear cargo door, and everything was progressing nominally. I was working on a section that was along the edge of the table closest to me. I was standing close to the work to see the other side where the puddle was. Since the shop is around 50 to 60 degrees F, I was wearing a T-shirt covered by a sweatshirt.

Unbeknownst (a lovely word) to me, the welding flame was being deflected by the tube right toward my navel region (which has nothing to do with my friends on boats). I started to notice a warming in the navel region, and assumed it was due to the radiation of the hot metal, as has happened many times before.

I responded by backing away from the hot metal a few inches while continuing the weld. This has always solved the problem before.

A few seconds later, I noticed the same warming again. Being somewhat perplexed by this, I glanced down to my gut to see flames emerging therefrom.

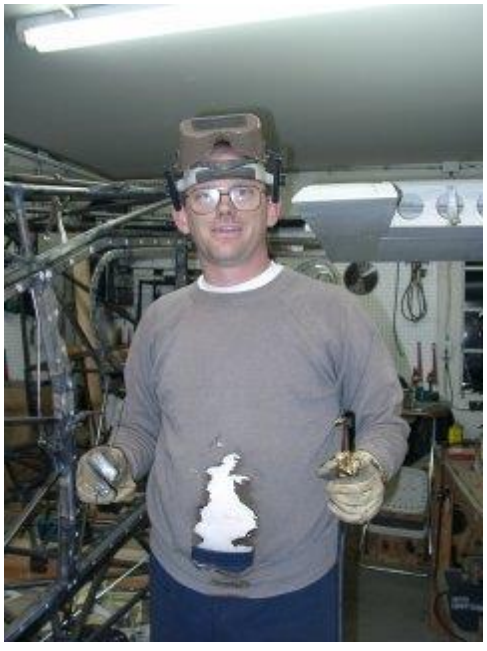
Of course, this is when things started to get exciting....

It's amazing how fast your brain processes in situations like this. The following took less time than it did to read this sentence.

Now flames have figuratively come out of other orifices in the past, but those orifices were generally connected to digestion. By this time, the burning hole in the sweatshirt was about 3 inches in diameter and the flame was about 3 inches long. Sensing this was bad, my first reaction was to swat at the flames. After a couple of swats with one hand and no success at extinguishing the flame, I figured that wasn't going to work.

My next idea was to strip the sweatshirt off. For that I was going to need both hands, and one hand was currently occupied by a welding rod and the other was occupied by a lit welding torch. I went to put down the torch and looked toward it to see where I was putting it. At this point I noticed that I was about to put a lit torch down on the table, and envisioned the problem rapidly getting worse.

At this point, my training kicked in. Granted, I haven't been to a class that specifically discussed what to do with a lit welding torch while your belly button is on fire, but I have been to plenty that talk about how very few things will get significantly worse if you take a couple extra seconds to respond in a logical manner than if you rush and panic (which tends to make things worse). I told myself "Don't Panic" (an actual mental quote) and realized that since my navel didn't feel incredibly hot, the skin probably wasn't burning yet. Therefore, the first priority was to get the welding torch shut off. I turned the fuel valve to off, killing the flame, and probably shut off the oxygen too just out of habit.



Dropping the torch and rod, I now looked again toward my gut where the next priority was. Still looking through my welding goggles, I grabbed for my sweatshirt with both gloved hands. Flashing through my brain goes "Stop, Drop, and Roll" which has been on one of those goofy Fed Ex commercials lately. Realizing that falling to the floor amongst the various tubes and stuff was probably not real practical, it occurred to me that a better option to pulling a flaming sweatshirt over my head, hair, and welding goggles would be to go at the flames with both hands (still in leather gloves). A couple of swats and the flames were out.

Crisis contained.

Of course, my brain is now screaming along supersonically trying to catch up to figure out what just happened. Assessing the damage, the sweatshirt was a mort, having a rather large charred hole in it. BTW, it was 50% cotton, 50% acrylic. Feeling the way it had burned, I'm now looking for 100% cotton, which is generally considered safer (cotton burns to an ash, unlike nylon which melts into your skin (very bad!)) for fire. The underlying T-shirt was slightly darkened, but otherwise intact. The skin in the navel region was undamaged (other than the excess fat underneath...).

Therefore, I'm uninjured other than just feeling a little more stupid...even though this experience all seems quite humorous, which is why I had to share it with all y'all...

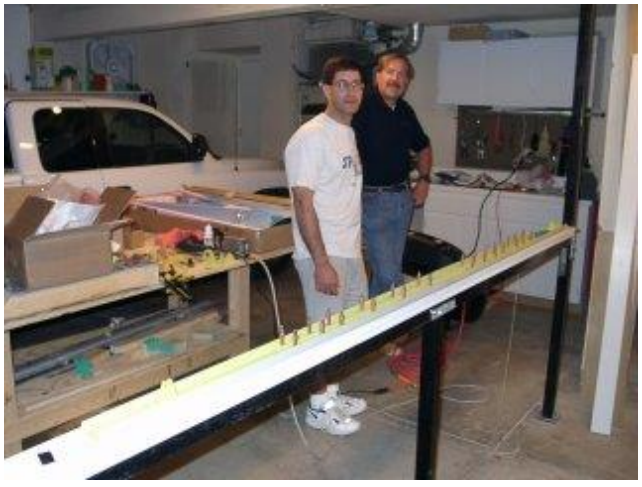
MORAL: Don't stand too close to where you're welding! (Like I should really need to tell anyone that...)

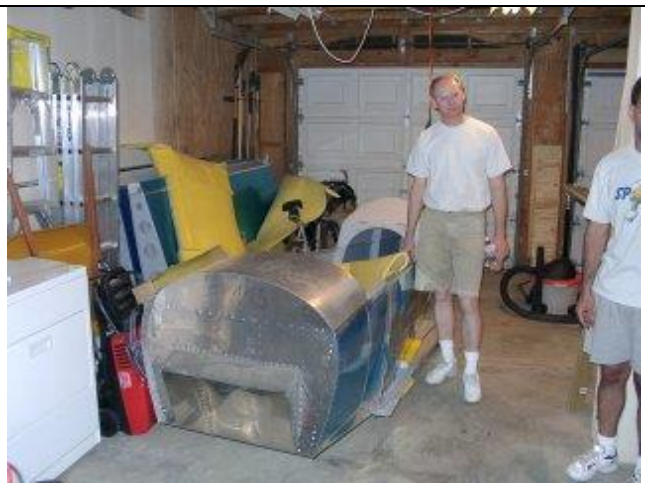
- Russ "Flaming Gut" Erb

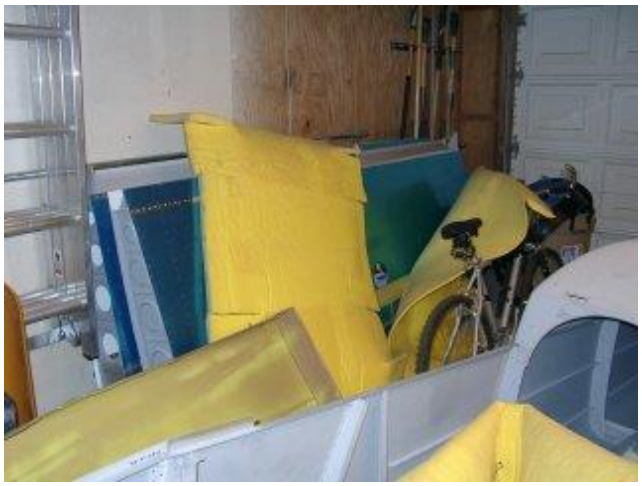
Vince Sei's F1 Rocket Kit

Following are some not-so-secret photos taken of **Vince Sei's** F1 Rocket kit shortly after it arrived at his house. It's changed quite a bit since then, as Vince has done a lot of work on it.

Seen here inspecting the kit are **Steve Cronk** and ***PPO* Howard Judd**. Notice the abundance of foam around the kit. Vince said that this was the primary packing material around the parts, and apparently is the other big product in the Czech town where his kit was assembled.







More Than You Wanted To Know About Pop Rivets

(*from the Bearhawk e-mail list*)

I'll let another builder set forth on the pop rivet issue. But I do know about the closed-end pops, and cannot imagine that a 4/5 ratio would be a sufficient replacement, unless you are talking CherryMax.

- Kent White

Pop rivets! One of my favorite subjects! I'll be the builder Kent is talking about.

First a note of background: as a structural engineer the one and only regular job I ever had before going out on my own was as an aerospace fastener specialist, so I got to see every kind of fastener possible doing everything possible.

I know I've expounded on this subject before, but I'm going to do it again. Sorry, but it's one of my soap box subjects.

There are pop-rivets and there are pop-rivets. And then there are aircraft-approved blind fasteners, don't confuse the two even though they appear to work the same.

First there are two basic variations of pull-type fasteners: locked mandrel and...I guess the others would be unlocked mandrel. The difference is that the locked mandrel types have a little clincher ring in the head of the rivet that is smashed around the mandrel and won't let it

fall out. That takes a special double action puller that smashes the ring into the rivet head while it's pulling the mandrel. Examples of these are Cherry Max and Huck MLS rivets.

The unlocked aircraft types are typified by the straight MS Cherry rivets we're all used to and which look for all the world like hardware store pop rivets. They're not, but they do share a couple of common problems with the hardware store rivets: lost mandrels and lack of hole fill.

Lost mandrels isn't a big deal other than the obvious leaking problems ASSUMING THE STRENGTH OF THE RIVET IS BASED ON THE SHELL WITH NO MANDREL IN IT. The problem of hole-fill is another subject.

Pull-type rivets are limited in their expansion by the mandrel. It will only do what the mandrel tells it to do and no more. Where a driven AN rivet will "flow" into the irregularities of the hole and actually "over expand" to form an interference fit, the pull rivet won't. If the hole is slightly egg-shaped or triangular, which virtually all drilled holes in thin sheet are, you wind up with a round rivet in a triangular hole. It's even possible to get a hole over-sized enough that the rivet isn't touching anywhere.

Most of these rivets have enough clamping force that they pull the sheets together and you don't know if the rivet is good until it has flown a bunch and vibrates loose and a loose rivet is contributing nothing to the strength of the joint.

Some pull rivets, e.g. the Cherry Bulb-Loc are designed specifically to promote hole-fill in thin sheet because the mandrel is designed to upset the butt of the rivet almost as if it has been driven. But, they ain't cheap.

Strength-wise, you can design to use any kind of rivet, even a plastic one, as long as you know what the allowable strength of that rivet is. You just wind up using more of them. Avdels, for instance, are certified for aircraft use but their shear strength (1/8") is 167 pounds versus 357 for an AD4 driven rivet (I pulled those off the top of my memory banks so they may not be totally accurate).

It's not just the shear strength that dictates the strength of the joint, however. It's a combination of the strength of the rivet and the bearing strength of the sheet. For instance a AD4 joint is 357 pounds in .025, 374 pounds in .032 and peaks out at 388 in .050 (I looked at a chart). Above .050 the rivet shears. Below, the sheet fails in bearing.

The real danger in assuming that you can substitute more pop rivets (I'm talking hardware stuff) for a joint designed for driven rivets is the effect of the lack of hole-fill. Right from the beginning a percentage of the rivets aren't going to be contributing 100% to the joint because they are in ill-fitting holes. Then, as the joint is loaded and unloaded, then vibrated, a few more rivets are going to back out of the fight because the small points of contact they had with the hole caused the rivet to fail in that tiny area and lose contact with the hole.

Airplanes that are correctly designed to use pull-type rivets first of all aren't using pop rivets. They are using aircraft grade pull rivets, usually Avdels or Avex and they have enough of them to provide a margin of safety. Still, the question of local fatigue failures due to rivets loosening up is hard to quantify. An airplane like the Bearhawk is designed around the strength of it's rivets and to even think about substituting a pull-type rivet is messing with the fundamental blood chemistry of the animal. Without doing a complete stress analysis you would have no idea what the effect would be. It's a pretty safe bet, however, that the effect won't be a good one.

Pop rivets have their place in non-structural applications, and certified Avdel/Avex aircraft rivets have their supporters (Zenair, Murphy, etc), but you've never seen a certified airplane put together entirely with pop rivets (although AeroStar used a fortune of Cherry Maxs in the wings) and there's a reason for that. If you're designing for the long haul, you use the tried and true driven rivet.

Yeah, pop riveted structures go together much faster, but they come apart the same way.

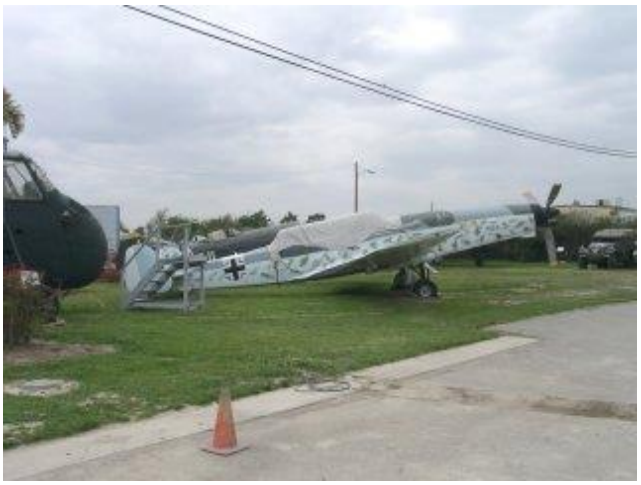
Sorry, didn't mean to ramble or preach. It's an occupational hazard.

Blame Kent.

- Budd Davisson

Project Police Aircraft Spotters Quiz

Not much room this month—nobody even tried on this one, not even the much-vaunted aircraft spotter **Jim Piavis**.



This aircraft was photographed at the **Planes Of Fame** in Chino. Per the sign, this is a **Fabrique Federale Farner-Werk C-3605 Schlepp** (*you knew that, right?*). It was "originally designed in the 1940s as an attack fighter with an inline engine. In the late 60s, 23 were re-engined with turboprop engines and used as target tugs. They flew with the Swiss Air Force well into the 70s."

Web Site Update

As of 11 Oct 03, the hit counter stood at **85718**, with the hit rate still at 19 hits/day for the last month.

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 661-538-2028.

Chapter 1000 Calendar

Oct 18: Young Eagles Rally, 8:00 am, Tehachapi Municipal, Tehachapi CA. (661) 822-0806

Oct 21: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942

Nov 4: EAA Chapter 49 Monthly Meeting, 7:30 p.m., General William J. Fox Field, Lancaster, CA. (661) 948-0646

Nov 11: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., High Cay, 4431 Knox Ave, Rosamond CA. (661) 609-0942

Nov 15: Young Eagles Rally, 9:00 am, General William J. Fox Field, Lancaster, CA. (661) 822-0806

Nov 18: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942

Dec 2: EAA Chapter 49 Monthly Meeting, 7:30 p.m., General William J. Fox Field, Lancaster, CA. (661) 948-0646

Dec 9: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., High Cay, 4431 Knox Ave, Rosamond CA. (661) 609-0942

Dec 13: Young Eagles Rally, 8:00 am, California City Municipal Airport, California City CA. (661) 822-0806

Dec 16: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942

Jan 6: EAA Chapter 49 Monthly Meeting, 7:30 p.m., General William J. Fox Field, Lancaster, CA. (661) 948-0646

Jan 13: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., High Cay, 4431 Knox Ave, Rosamond CA. (661) 609-0942

Jan 20: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942

Feb 17: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942

To join Chapter 1000, send your name, address, EAA number, and $20 dues to: EAA Chapter 1000, Doug Dodson, 4431 Knox Ave, Rosamond CA 93560-6428. Membership in National EAA ($40, 1-800-843-3612) is required.

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Inputs for the newsletter or any comments can be sent to Russ Erb, 661-256-3806, by e-mail to erbman@pobox.com

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THE LEADING EDGE
MUROC EAA CHAPTER 1000 NEWSLETTER
C/O Russ Erb
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Rosamond CA 93560-7692
http://www.eaa1000.av.org

ADDRESS CORRECTION REQUESTED

THIS MONTH'S HIGHLIGHTS:
REGULAR MEETING 21 OCT AT TPS
AWOH REPORT—PICTURES, PICTURES!
OPUS GETS WINGS...er...A KIT
ALL ABOUT POP RIVETS

EAA™
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