

THE LEADING EDGE

NEWSLETTER OF MUROC EAA CHAPTER 1000

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

President	Gary Aldrich	661-609-0942
Vice-President	Hellmuth Steinlin	760-963-5445
Secretary	Kent Troxel	661-947-2647
Treasurer	George Gennuso	661-265-0333
Newsletter Editor	Russ Erb	661-256-3806

<http://www.eaa1000.av.org>

October 2016

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:



SAM-EX

Hellmuth Steinlin
Tuesday, 18 October 2016
1700 hrs (5:00 PM Civilian Time)
USAF Test Pilot School Auditorium
Edwards AFB, CA

Our **Vice Kommandant** has been traveling again. While visiting the Zenith Aircraft Company, the manufacturer of the CH 750 that he is currently building, he was introduced to their latest project, the SAM-EX, which he is not building. Even so, he found out a lot about this new project and would like to share this knowledge with us.

(Liberally swiping from www.sam-aircraft.com) The SAM-EX is an Experimental Amateur-Built version of the SAM aircraft introduced in 2012 by Thierry Zibi. The SAM-EX is a sleek all-metal low-wing tandem two-seat light aircraft that captures the lines of the legendary trainers of the 1930s - 1950s. The revamped cabin offers comfortable seating, exceptionally wide shoulder width (26-inches in the canopy and more than 31-inches wide inside the roomy fuselage) and a wrap-around canopy which offers outstanding visibility. The demonstrator aircraft is equipped with a modern glass panel display system (Dyonon Skyview) and a center stick with left-side throttle quadrant, similar to what is found in the cockpits of modern combat or military training aircraft.

Prior to the meeting will be the usual schmoozing courtesy of the **Schmoozemistress**. Following the rousing presentation, we will adjourn to the **BK Dead Kow Emporium** for victuals and a rousing discussion of what

we just saw. Alternative topics include guesses as to what **Opie** and **Stormy** are up to in Texas.

- For the **Vice Kommandant**

Last Month's Meeting

EAA Chapter 1000
 Bearhawk Manor
 Rosamond, CA
 20 September 2016
Gary Aldrich, Presiding

The September meeting was held at Bearhawk Manor in Rosamond, CA with 9 members and guests in attendance. The initial part of the meeting was held in the garage area, also known as (aka) the gestation location of the **Combat Bearhawk**. Schmoozing snacks and drinks were provided by the **Schmoozemistress**.

The first order of business was a demonstration by our own **Vice Kommandant Hellmuth Steinlin** of the **Oratex** fabric covering system. This system is made in Germany by Lanitz Aviation. It is distributed in this country by BetterAircraftFabric™ in Anchorage Alaska.

Hellmuth brought a control surface from an ultralight for the covering demonstration. As it was fabricated from thinwall aluminum tubing, foam ribs, and a little bit of fiberglass cloth, many of us were impressed, yea, even amazed at just how little the structure weighed. **Knife** even suggested that we should tie it to the table lest it should float away!

Hellmuth proceeded to show us the Oratex covering process, as shown in the following hazy pictures. I have no idea why the pictures are hazy, as the camera worked fine later. First, the structure and fabric were coated with Oratex glue. "It is used to coat all surfaces that are to be in contact with the fabric or that are to be glued to the fabric as per aircraft design specifications. On crucial areas such as fabric seams the glue should be also used to coat the underside of the fabric where it is to be glued down, as an additional redundant safety precaution against leaving bare spots or similar issues...As the fabric is airtight and watertight, the glue has to be completely dry before the fabric is brought in contact with it." After the glue has fully dried, the fabric is put in place. An iron or heat gun



is used to activate the glue by heating it above 200°F. This forms the bond. The glue must be then allowed to fully cure for another day or so (I don't remember the exact time). After the glue has cured, the fabric can be shrunk for tightness with an iron or heat gun. Needless to say, **Hellmuth** did not demonstrate this last step, as no one was able to stick around until the next day to wait for the glue to cure.

(Disclaimer: The reviewer is an experienced user of another covering system and can thus be expected to be biased. Feel free to do your own review for your situation.)

Benefits

Oratex is marketed as being easier and faster to apply than other fabric covering systems. The fabric is provided with all of the required coatings, including top coat paint, pre-applied. All fabric covering systems must be glued in place and subsequently shrunk. The claimed benefit of Oratex is that at this point the covering is complete. Other systems required coatings to stabilize the fabric, coatings to provide ultraviolet (UV) protection, and then top coat color paint. If you really don't like spray painting, this could be seen as a major benefit.

Because the fabric is pre-painted in a solid color, trim decoration is accomplished with self-adhesive trim tapes, polyester films, or vinyl decals.

The system is advertised as "Completely solvent free work environment". The glue "is patented worldwide but more important to you is the fact that it will not expose you in any way to any toxic chemicals or solvents."

Liabilities

Currently the system is only available for use on ultralights and Experimental Amateur Built aircraft. There are no STCs to allow application to certificated aircraft.

Because the fabric is pre-painted, it lends itself to paint schemes that consist of a single color with some trim. It does not seem to lend itself to two-toned paint schemes such as seen on the **Combat Bearhawk**. It would seem that to pull off a paint scheme like the **Combat Bearhawk** would require covering the whole fuselage and tail with one color, and then recover over half of that again with another layer of covering to get the second color.

While the marketing materials claim that the entire system is hazard free, the glue bottles are clearly marked "Contains isocyanates." Why would they put that on the bottle if it wasn't a problem? Isocyanates are the stuff in Aerothane or Imron paint that will kill you if you spray them without a positive pressure face mask. Granted, brushing or rolling on the glue does not aerosolize the glue like spraying paint. Even so, **Jimmy Doolittle III** was telling the story of building models using **Jet** cyanoacrylate glue and inspecting the glue line a little too closely, which led to significant respiratory problems for a day or so.

Even if the glue isn't hazardous, because the glue must be applied and allowed to dry before applying the fabric, the fabric application process is significantly slowed down. Other systems glue down the fabric about as fast as you can brush the glue on. The requirement to apply the glue to the fabric seems to further complicate the process. Additionally, the cure time prior to shrinking further slows the process.

The instructional material promotes the use of a heat gun for application and shrinking. Other systems say not to use the heat gun because the temperature cannot be controlled accurately, making it hard to get a consistent shrink.

Finally, no claims are made about fire resistance.

Tuki's Taco Tuesday!

After the demonstration, the assembled sub-masses moved inside Bearhawk Manor to imbibe in **Tuki's Taco Tuesday** provided by our own **Schmoozemistress**. Much good food was imbibed and many lies were swapped.

Most of this is true.

- **Russ Erb**

Emergency Backup Minister of Propaganda
Chapter 1000 of the Experimental Aircraft Association of these United States of America and Occupied Territories
"We have more zeroes in our chapter than any other!"

Kommandant's Korner

Seems to be a chill in the air as I write this. Could Fall be upon the Antelope Valley? The weather guessers promise a warming trend for the weekend but that may only mean a brief period of nice flying weather before the inexorable march toward Winter with its icing and stiff breezes. The 16-19 September trip **Mrs. Kommandant** and I penned in the logbook may well have been the last "good" aviation adventure of the Summer flying season.



That trip was in honor of the combined birthday celebrations of first daughter **Rachel** and her husband **Greg**. It was billed as "A celebration of 90 years on Earth"...or something similar as that's the number you get when you add their ages together. **Rachel** planned a big party in a rented hall in Eureka and the **Skywagon's** task was to transport **Anne, Debra, and Mike** to the soiree. Alas, the Charest's bumped **Pixel** from the manifest and she spent the weekend at her sitter.

You may recall that time period as being in close proximity to our yearly stay in **Carlsbad**, which necessitated leaving that pleasant locale a day early (Friday) to drive home, change out our beach clothes for heavier duds, drop **Pixel** off, and launch for **Petaluma Airport (O69)**. This airport is nicely situated between San Francisco and Santa Rosa and is reasonably close to San Rafael, home of the **Charests**. Actually, **Gness Field (KDVO)** in Novato is closer to them, but is plagued by vexing crosswinds (as reported in an earlier 'Edge).

The weather was more benign in Petaluma and also promised fuel at only \$4/gal. With all the BMW and Cessna travel we still managed to arrive at O69 around 1730 and in time for cocktail hour. Early Saturday morning we loaded up the **Aldriches**, the **Charests**, a case of wine (down from the hoped-for two cases), luggage and 60 gallons of 100LL. That brought us to within 100 pounds of the gross weight limit but the fresh engine and low field elevation made the **Fightin' Skywagon** perform as if lightly loaded. I picked up an IFR clearance from Oakland Center after our VFR departure as the forecast in the

Eureka/Arcata area was for low clouds and "iffy" visibilities. We cruised at 8000 feet MSL and, upon checking in with Seattle Center, changed our destination from **Eureka (KEKA)** to **Arcata (KACV)**. The reason for the change was the reported weather at ACV of 320/15 300 OVC and 3 miles visibility. The pesky sea fog was rolling in causing variable ceilings and visibility. As there was no weather reporting from EKA, I opted for the ILS to runway 32 at ACV with its 200 and 1/2 minimums. The approach and landing was uneventful as we broke out about 600 feet AGL and touched down on the "clear end" of the runway. We also had the pleasure of forcing a commuter jet to hold while we completed our approach. Sorry bud, I can only go so fast and make a safe landing!

By late morning we were in Arcata browsing their annual festival on the square (ask me about that event...). That evening we partied "like it was 1999"...or at least 1976 (Rachel's birth year). Sunday dawned clear, surprisingly, and after spending some quality time with the **Coits** we departed VFR for the return flight to O69. A hefty tailwind pushed our ground speed into the 140-150 knot range, making for a short trip and a pleasant evening back at the Charest residence.

Early Monday morning we tried out Uber for the first time to transport us from Debra's house to the airport. Both **Mike** and **Debra** had early work requirements and couldn't provide the lift (some people have to work on Mondays...). The Uber driver was prompt, courteous and not all that expensive and soon we were on our merry way down the San Joaquin Valley at 7500 feet MSL on a direct course to KWJF. Tailwinds prevailed once more and we were able to settle the VC-180 into her hangar and still get Anne to her lunchtime Rotary meeting.

We logged something between 6 and 7 hours round trip and were able to have a great family weekend for about the cost of a couple of Southwest Airlines tickets. Gotta love general aviation!

The next adventure is Thanksgiving...at Debra's house, so I'll be keying O69 into the GNS530W once again. Hopefully, the weather will cooperate! Until then,

Fly Safe and Check 6!

- **Gary Aldrich**

Kommanding

Young Eagles Report

The weather was perfect for another Young Eagles Rally on Saturday 24 September 2016, hosted at Tehachapi Airport (KTSP), CA.

The volunteer spirit was energizing as 11 pilots and 11 different aircraft came together to make dreams come true for numerous Young Eagles, aged 8 to 17. The volunteer pilots and ground support personnel visited from Kern

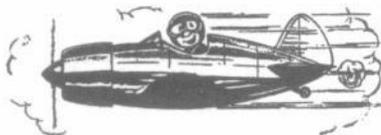


Valley Airport, Edwards AFB, Fox Field, Rosamond Skypark, Acton, and Tehachapi Airport, CA to make the event successful and safe.

In all, 32 sorties were flown for 25 different Young Eagles who accumulated a total of 37 Young Eagle flights; which means several Young Eagles were able to enjoy more than one flight. One Young Eagle actually flew a total of five times!

The Young Eagles Rally is an event promoted by the Experimental Aircraft Association's (EAA) community outreach program to help the youth in our community experience the freedom of flight. This specific event was coordinated by **EAA Chapter 1000** of Edwards AFB in response to a request from the local chapter of **Women in Aviation International (WAI)** to support "Girl's In Aviation Day 2016". Fourteen of the twenty five Young Eagles were young ladies, some of whom experienced their first flight in a small aircraft, with the opportunity to actually control the aircraft during their scenic flight around Cummings Valley. The WAI members served as excellent hostesses for the event and made everyone feel welcome during the very successful team effort.

For more information on EAA Young Eagle events near you, access the Young Eagles Calendar via the following link: <http://www.eaa.org/en/ea/events>



- Tom "Duke" Wayne
EAA Chapter 1000 Young Eagles Coordinator
661-733-8825
twfox2@sbcglobal.net

Low Cost, High Quality Borescope

Since the dawn of powered flight, engine reliability has been key to continued flight. As such, mechanics have long sought out methods to detect impending engine failures before they happen. One such test that has been used since the days of the big radials is the differential compression check. This is basically just a test of how well everything in the cylinder seals. Compressed air at 80 psi is introduced into the cylinder through a calibrated orifice and the pressure inside the cylinder is measured. More leakage in the cylinder results in a lower pressure, and a lower pressure is interpreted as indicating a problem.

Unfortunately, a low pressure indicates a problem, but that is all it indicates. Nothing more specific than something is wrong. There are methods for determining what is leaking, such as listening at the carburetor, exhaust pipe, or crankcase breather. While this may determine the location of the problem, it really doesn't say anything about the severity of the problem. Much anecdotal data has shown that virtually nothing definitive can be determined from the numbers of a compression test alone.

Many folks, including well known master mechanic **Mike Busch**, say that a borescope inspection is a necessary complement to a compression test. The borescope is basically a camera that can be inserted through a spark plug hole and used to inspect the inside of the cylinder without disassembling the engine. The ability to see the valves and cylinder walls has greatly improved troubleshooting and early detection of engine problems.

For years borescopes were either very expensive or had such poor image quality as to be useless for this application. With the ongoing development of electronics and small cameras for cell phones and other uses, the quality of the borescope image has improved while the prices have plummeted.

I was introduced to the Vividia VA-400 Ablescope in an article in KITPLANES I was reading while watching my daughter at the playground at the mall in Valencia. The author had much good to say about it, and the best part he had to say was the price. I bought one from Amazon.com for the low low price of \$149.98, which was dirt cheap compared to the \$1500 price of other borescopes available as recently as a year previous.

Part of the reason this borescope costs so little is that it is essentially just a purpose built web cam for a computer. It doesn't include any sort of a display or memory for saving pictures. Instead, the borescope has a USB connector to plug into a Windows computer. The computer serves as the display and provides the means to save pictures or videos. Free software is provided if you don't already have web cam software. Since I already had a suitable netbook, this requirement added nothing to the cost of acquiring the borescope.

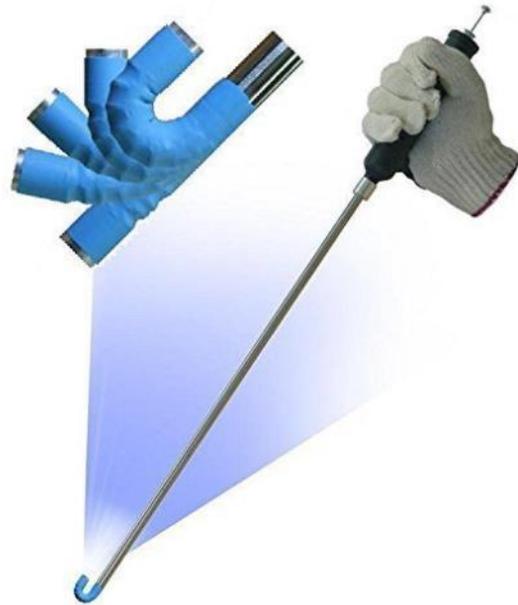
Another alternative for a display is to use an Android tablet with free apps available. Strangely enough, the iPhone and iPad are not supported.

Other borescopes use mirrors to look back toward the top of the cylinder and a little bit of articulation to move

the point of view around. This can lead to confusion while trying to comprehend where the view point is. This results in just random motion of the borescope in hopes of seeing something recognizable.

By comparison, the VA-400 uses no mirrors, and instead articulates the head up to 180 degrees, allowing it to look back on itself. The articulation is always in the same direction, that is, in the direction that the USB cable leaves the handle. This makes it much easier to comprehend which way the camera is pointed inside the cylinder. Articulation is controlled by pushing on a button at the end of the handle. The articulation can be locked in any position if desired.

LED lights are provided around the camera to provide light inside of the dark cylinder. Power for the lights and camera is provided from the USB port on the computer.



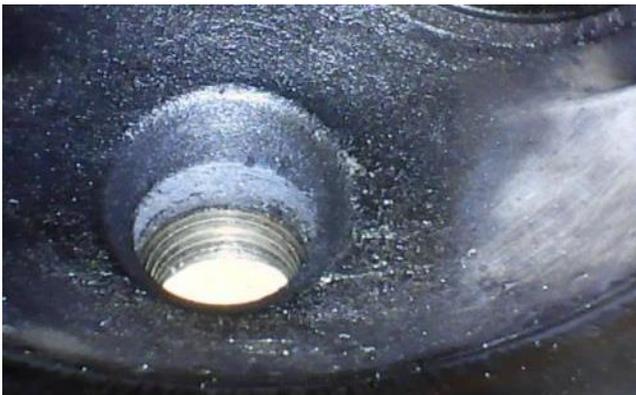
All of these features and price are meaningless if the picture quality is unusable. To test this, I set out to take some pictures inside of cylinders. However, I purchased this borescope shortly after I had completed the Condition Inspection on the **Combat Bearhawk**, and I didn't want to unnecessarily remove spark plugs on a flying airplane. Instead I pulled a cylinder out of storage that had been removed from my engine when I reassembled it with all new cylinders. This cylinder was never run, so the valves appear to be new because they are. These pictures were taken with just the light of the LEDs on the borescope.



Exhaust Valve



Intake Valve



Spark Plug hole



The "Piston", or where the piston would be. This is actually the bottom of the cylinder and the plastic bag that the cylinder is stored in

Hopefully these pictures come out as good in your presentation as they did on my original computer. They look better to me than any pictures I've seen from other borescopes.

- Russ Erb

New Member

In September 2016 the *Project Police* welcomed a new **PPO Miles Middleton** into our ranks. Miles is a bomber test pilot who lives in Tehachapi with his wife Pamela. At Bearhawk Manor he regaled some of us with stories of restoring a **Stinson 108-1** with his father back in Fort Collins CO. He also claims to have an RV-8A, but we don't have any details as to the status or location of its construction. He also lists interests in Vintage and Classic aircraft, Warbirds, and vintage British cars. If we get word that he is installing any Lucas Electric devices in his RV-8A you will be contacted with the time and location of the intervention so that you can participate.

Future *Project Police* Events

Our regular meeting in November (15 November) will be at the Flying Dog Ranch. This will be our semi-annual meeting with the visiting USAF Academy cadets. Come and be amazed at how the food seems to disappear right before your eyes.

Our regular meeting in December (20 December) will be our celebration of all end-of-year holidays under the catch-all name of "Festivus". This will take place, as always, at the Kommandant's Kwarters in Quartz Hill. You should already be thinking about what you wish to contribute to the **Kommandant's Krap Gift Exchange**.

Letters to Evil Editor Zurg

Re: Unusable Fuel



Just another possible source of error (spelled n-i-t-p-i-c-k) from an old retired instrumentation engineer. :O)

According to the (ever reliable) Wikipedia:

"All grades of avgas that meet CAN 2-3, 25-M82 have a [density](#) of 6.01 lb/U.S. gal at 15 °C, or 0.721 kg/l. (6 lb/U.S. gal is commonly used for [weight and balance](#) computation.)^[1] Density increases to 6.41 lb/US gallon, or 0.769 kg/l, at -40 °C, and decreases by about 0.1% per 1 °C (1.8 °F) increase in temperature."

It isn't too hard to imagine your fuel being 10°C higher than standard, therefore being approximately 1% (0.5 gallons out of 50) less dense than estimated.

As I said, just a nitpick. If you ever get that close, you have (or soon will) other problems.

Also:

Re: "Hmmm, Where's The Declutter Button?"

If airplanes really were several miles long as depicted on the screenshot, there REALLY would have been a problem!

- Miles Bowen
Chapter 1000 Det. 45G
Brighton MI



Bowlus Baby Albatross



The Nelson BB-1 Dragonfly, a derivative of the Baby Albatross. Hawley Bowlus wanted to call it the Bumblebee, but there was concern that Republic had trademarked everything *-bee

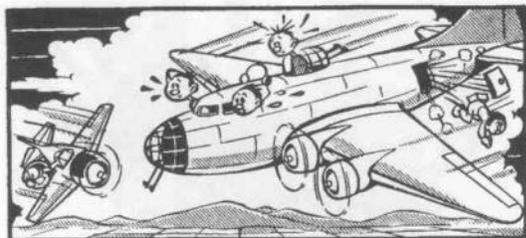
Random Airplane Pix For The Express Purpose of Filling The Remaining Space



The Boeing 367-80 with the diminutive Bowlus Baby Albatross glider below and the Grumman G-22 Gulfhawk II above



Boeing 307 Stratoliner *Clipper Flying Cloud*, the first pressurized airliner. It flew at 20,000 feet with a cabin altitude of 8,000 feet. It used the wings, tail, and engines of the B-17C.



Web Site Update



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 11: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942
Oct 18: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942
 Nov 8: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942
Nov 15: EAA Chapter 1000 Monthly Meeting, 6:30 p.m., Flying Dog Ranch, 4400 Knox Ave, Rosamond CA. (661) 609-0942
 Dec 13: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942
Dec 20: EAA Chapter 1000 Festivus Etc Celebration, 6:00 p.m., Kommandant's Kwarters, 42370 61st Street West, Quartz Hill CA. (661) 609-0942
 Jan 10: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942
Jan 17: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942
 Feb 14: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942
Feb 21: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942
 Mar 14: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942
Mar 21: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942
 Apr 11: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942
Apr TBD: EAA Chapter 1000 Monthly Meeting, Semi-Annual Cookout with the Cadets (661) 609-0942

To join Chapter 1000, send your name, address, EAA number, and \$20 dues to: EAA Chapter 1000, George Gennuso, 3119 Lennox Ct, Palmdale CA 93551. Membership in National EAA (\$40, 1-800-843-3612) is required.
 Contact our officers by e-mail:
 President/Flight Advisor Gary Aldrich: gary.aldrich@pobox.com
 Vice President Hellmuth Steinlin: hellmuthsteinlin@hotmail.com
 Secretary Kent Troxel: kenttroxel@sbcglobal.net
 Treasurer George Gennuso: pulsar1@sbcglobal.net

EAA Chapter 1000 Technical Assistants

<i>Composite Construction</i>		
George Gennuso	pulsar1@sbcglobal.net	661-265-0333
Brian Martinez	brianmmartinez@aol.com	661-943-5379
<i>Wood Construction</i>		
Bob Waldmiller	bob@waldmiller.com	661-256-0932
<i>Aluminum Sheet Metal Construction</i>		
Bill Irvine	wgirvine@yahoo.com	661-948-9310
Russ Erb	erbman@pobox.com	661-256-3806
<i>Welding/Welded Steel Tube Construction</i>		
Russ Erb	erbman@pobox.com	661-256-3806
<i>Engine Installation</i>		
Russ Erb	erbman@pobox.com	661-256-3806
<i>Electrical Systems</i>		
Russ Erb	erbman@pobox.com	661-256-3806
<i>Instrumentation and avionics requirements for VFR/IFR</i>		
Gary Aldrich	gary.aldrich@pobox.com	661-609-0942

Inputs for the newsletter or any comments can be sent to Russ Erb, 661-256-3806, by e-mail to erbman@pobox.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
 3435 Desert Cloud Ave
 Rosamond CA 93560-7692
<http://www.eaa1000.av.org>**

ADDRESS SERVICE REQUESTED

**THIS MONTH'S HIGHLIGHTS:
 REGULAR MEETING 18 OCT @ TPS
 ORATEX COVERING REVIEW
 YOUNG EAGLES REPORT
 LOW COST HIGH QUALITY BORESCOPE**

