



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>

December 2006

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:



Project Police *festivus*

Celebration

Tuesday, 19 December 2006
 1800 hrs (6:00 PM Civilian Time)
 Kommandant's Kwarters
 Quartz Hill, CA

Continuing the long-standing tradition, this month's gathering is being held in honor of the various winter holidays...Christmas, Hanukkah, Kwanza, Festivus, etc, etc, etc. Though we will gather on the normal Tuesday (19 Dec), **the time and place are non-standard**...a challenge to your orienteering skills. We will all be gathering at the Kommandant's Kwarters. Waypoint coordinates are: N34 39.137, W118 14.273. For the GPS-challenged, the address is 42370 61st Street West in Quartz Hill. There's a map below, provided by E^2 Zurg. For an ASR or PAR, contact the Kommandant on 661.609.0942 Mhz.

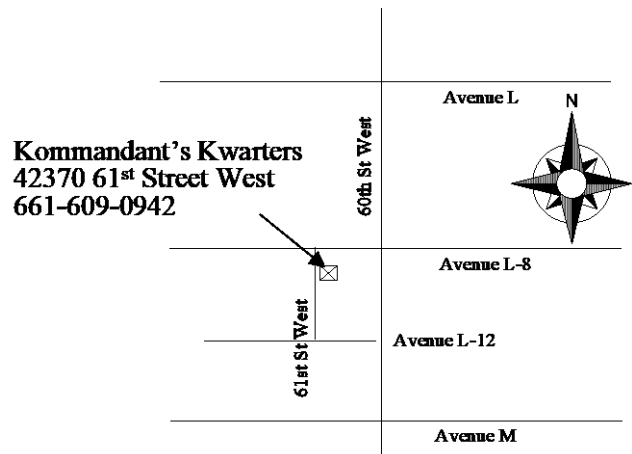
We will proceed separately in groups to the meeting location at/about 1800 hours on 19 December. You are expected to bring your spouse, co-pilot, life partner, significant other to this event (no pets or miniature humans, please). Beer-swilling "First Puppy" Pixel is looking forward to the event, having attained a "really cool buzz" last year. She may be seen prancing around with a lampshade on her head and begging people to "pull her

paw"...just ignore her.

Generous amounts of liquid refreshments will be provided as well as Mrs. Kommandant's legendary lasagna, and perhaps a high-fructose, "death-by-chocolate" dessert. You won't find the traditional Hanukkah jelly doughnut as apparently few could shift their paradigms far enough to eat doughnuts for dinner (except Erbman, who did his best to deplete the supply).

In addition to the customary re-telling of the **Festivus Joke** by Kent "Cobra" Troxel, we will be reprising the "**Kommandant's Krap**" traditional gift exchange. Remember, this is not your Daddy's gift exchange, but rather an opportunity to dump...er...re-gift that little item that a) wasn't on your wish list; b) didn't fit/wasn't your color; c) was dumped on you in some other fashion. IF you have such an item (with a value in the \$20-range), recently received or not, please wrap it back up and bring it along. You will have the opportunity to trade your trash for someone else's treasure according to a set of carefully constructed rules. REMEMBER, if you don't bring something, you can't take something. As always, participation in the gift/re-gift is not required, but **ridicule of the non-participants is.**

- Gary Aldrich
 Kommandant



Last Month's Meeting

EAA Chapter 1000

Rosamond CA

Fox Field, Lancaster CA

21 November 2006

Gary Aldrich, Presiding

Just as a “Blue Moon” occurs infrequently, November proved to be a rare “twofer” for chapter events. **Doug** and **Gail Dodson** hosted the semi-annual grillage/cookout (technically not a BBQ since no actual sauce was involved) for visiting **USAF Academy Zoomie Cadets** on **14 November**. **Vice Kommandant/Grillmeister George “Knife” Gennuso** manned the grill in what proved to be a night/IFR exercise (smoke was so thick you couldn’t see your hand in front of your face).

Regularly scheduled programming was resumed on 21 November with a **Project Police** “tour de Antelope Valley” beginning with **Russ Erb’s Bearhawk**. **Russ** graciously provided the entourage with sodas and C³s, and a running narrative of the significant progress since our last raid. Of particular interest was the 20+ AMU avionics stack recently ordered at Oshkosh.



(Note: for the uninitiated, AMU is a Chapter 1000 approved acronym for Aviation Money Unit. Further details are **CLASSIFIED SECRET NO SPOUSE**. Check with a Chapter Officer for further details.)

Also of note, the Kommandant was sporting his new custom tailor-made CWU-45/P flight jacket (in rich Corinthian lamb leather) from Pop’s Leather (<http://popsleather.com/>), also Chapter 1000 approved.



Our original agenda called for us to proceed to **Brian Martinez’s** house to inspect his original design twin canard project, however, a family emergency took Brian out of town.



Being the flexible, if not totally aimless, bunch that we are, we proceeded to the third (now second) scheduled inspection of **Frosty Wyatt’s RV-9 “Belch Fire 290”** (the aircraft formerly known as the **Dreaded Yellow-tailed Gnatsnapper**) at his newly acquired hangarage at Fox Field (WJF). It was noted that Frosty committed a significant faux pas by NOT having sodas and C³s. The inspection was unusually harsh as a result.



Due to the advanced onset of darkness, the **Kommandant** determined that additional inspection was futile and so declared **victoriousness**. Those present adjourned to Barrone's for much pizza and beer, where we were joined by **Mrs. Kommandant**.

So ended another successful **Project Police Tactical Assault Force** raid, all without casualties or serious injury. At last report, all participants made it home safely and without incident or interaction with the local constabulary.

- Kent "Cobra" Troxel
Minister of Propaganda

Kommandant's Korner

HAPPY HOLIDAYS!

Much of my creativity was expended in crafting the meeting notice on page one...so don't look for too many "gems" in this month's column. Hey! Even Hemingway had his dry spells (well, not including alcohol). Speaking of dry spells, the sortie rate on the **Fightin' Skywagon** continues to fall well below the monthly average. Despite the doldrums caused by AuSepTober, crummy weather, and other excuses (no, not "the sun was in my eyes") the annual total for 2006 should still be well over 100 hours. This is the minimum goal to keep away the gremlins of disuse. I hope to log a few end-of-year flights during the TPS "curriculum break", so the logbooks aren't closed yet.



One rather fortuitous consequence of a low sortie count is the ability to shift some funds originally budgeted for operating expenses into the "capital improvement" fund. Yup, **more toys**. I'm seriously considering implementing the "electric Skywagon" mod. By that I mean elimination of the vacuum pump, the vacuum-driven gyros and their associated plumbing (to include the marginal standby vacuum system that relies on manifold pressure to operate). No, I'm not going to be VFR-only; the idea is to replace the vacuum gyros with electric versions. Reliability numbers on current-generation electric gyros has improved considerably (some claiming 10,000 hours). Further, costs have come down...though not as much as I'd like. Some may argue that I am giving up some level of redundancy, but I would offer up the increased reliability of the gyros coupled with the existing dual power source (alternator plus battery). There is also an excellent, though pricey, attitude indicator with a built-in backup battery available from Mid-Continent Instruments. Other benefits to be derived from an all electric solution would be decreased weight, translating to more payload. Obviously, an even better option might be to eliminate spinning-mass gyros altogether, but that technology is, sadly, still way too expensive for implementation in aircraft without an experimental airworthiness certificate.



So, there's your topic..."talk amongst yourselves". I'd welcome feedback from this august group of aviation aficionados even though it's December. I'm going to close early 'cause Zurg is being pressured to publish Erbman's B-17 opus and he needs all the white space I can spare.

Fly safe and watch out for Santa's sleigh...I understand he flies around at night with only a single flashing beacon.

- Gary Aldrich
Kommanding

New Member

The *Project Police* welcome to the fold **Lee McCullough**, who had been hanging around at a few of our meetings and finally got the good sense to join up. Lee and his wife Karen live in Lancaster, and he stays out of trouble during the days by working in “Business System Support” at Northrop Grumman. He is co-owner with **Ed Palmer** of a 1974 Cessna 182P which is hangared at Rosamond Skypark, patiently waiting to be joined by **Erbman’s Bearhawk**. Lee blames **Vice-Kommandant George “Knife” Gennuso** with dragging him in to this nutty chapter.

Project Police Fly The B-17 “Aluminum Overcast”

(As you can tell, this Magnum Opus has been in work for some time. We think this is the most comprehensive report on what it is like to “Fly The Fortress”. If you can find one more comprehensive, we’d like to hear about it. Because of its extensive (some would say long-winded) nature, it will appear in a series of installments over several newsletters. Hopefully that will give you something to look forward to. If you really like what you read, start saving your dimes and nickels—for just \$359 you will be able to “Fly The Fortress” yourself on 17-18 Apr 2007 right here at Fox Field. Better yet, donate your time to assist with the operation and get selected for one of the coveted “free” spots!)

Recently (i.e. back in 2002) the *Project Police* were called upon to evaluate the **EAA Aviation Foundation’s B-17G Aluminum Overcast**. Of course, in hindsight this was merely a formality, since the overwhelming coolness factor of just being a flying B-17 guaranteed an **“APPROVED”** rating.



Engine #2 Start

The B-17 was evaluated as part of the Test Pilot School Qualitative Evaluation program on 28 October 2002 by **PPO Doug “Opie” Dodson** and on 29 October 2002 by **PPO Russ “Erbman” Erb**.

Additionally, the B-17 “909” had been flown briefly in years previous by **PPO** and **Kommandant Gary Aldrich**. **Evil Editor Zurg** has been on his case for years to write an article about flying the B-17, but he kept

dodging the flak. To assist with the evaluation, the **Kommandant** helped the crew of *Aluminum Overcast* by filling an empty seat on the 2006 media flight so they didn’t have to recompute the weight and balance. He was joined by **PPO Mike Machat**.



PPO and WINGS/AIRPOWER editor Mike Machat prepares for his evaluation of the Flying Fortress



Preflight “Don’t Do Nuttin’ Dumb” Briefing

In 2002, **Opie** and **Erbman’s** flights each logged 2.5 hours of serious time travel back to the days when men in airplanes were shot at and women lusted after Gregory Peck portraying said men.

What We’re Not Going To Cover

First of all, if you want to know the specifications, length, wingspan, gross weight, tire size, range, ceiling, or aluminum alloy, you’re going to have to go somewhere else. All of that has been covered in gross detail in many fine books and magazines available on the market. If you want to know the operational history of the B-17, just watch the History Channel at the appropriate time of the month, or read one of the aforementioned books or magazines.

What We Are Going To Cover

What we are going to talk about are those juicy little bits of insight and experience that can only be noticed if

you get to actually be in a B-17, and some that can only be experienced in flight. And remember that unlike most warbirds, you can actually buy your way onto the *Aluminum Overcast* for a flight. See <http://www.b17.org> for details.

But I Can't Wait! How Can I Find Out More?

You're in luck. Contact **Erbman** and ask for a copy of the EAA flight training manual for the *Aluminum Overcast*. It comes in PDF format. This manual has a good discussion of various systems aboard. For instance, as you'll see in a minute, there's a lot more electrical motors and jackscrews on this airplane than hydraulic cylinders.

Whatcha Can't Do

Because the *Aluminum Overcast* is flown with virtually untrained civilians aboard, and to keep **Karen Kryzaniak's** (EAA's Corporate Risk Manager) headaches to a minimum, they have certain rules of things you can't do on the airplane in flight.

If you wanted to watch the runway coming at you or receding away from you on takeoff or landing, give it up now. No one is allowed in the nose area (bombardier, navigator stations) during takeoff or landing. The official reason given is that the exit path is too restrictive (and it's not like waltzing down a Pentagon corridor—it is tight), plus I think there is concern that there isn't a whole lot of crashworthiness in this area should the unthinkable happen and something or someone tries to turn this massive tail-dragger into a nose-dragger by stomping on the brakes too hard or some other aviation sin.

Likewise, the tail gunner position is off limits. Specifically, all personnel must remain forward of the tail wheel for the entire flight, which is probably a good idea since the whole tail section is very cramped.

The ball turret is off limits during flight. The reason given is that there is no power connected to it so it can't be maneuvered anyway. I was told that the parts and technology exist to make the ball turret fully operational (at least for maneuvering if not firing), but that the EAA Aviation Foundation has specifically directed that the turret not be made operational. As I was trying to determine the operational risk that would be created by a functioning ball turret, I asked one of the crew members if the Foundation had given a reason for not hooking up the ball turret. His answer was something along the lines of "Because they know if we did, we would play with it." Note that if you really have a hankerin' to pull your knees up to your elbows, you may be able to convince one of the crew to allow you to crawl into the turret on the ground.

Wannabe flexible gunners will be disappointed too. There was the placard on the waist guns that said "Do Not Touch" but I thought that might be negotiable. Then there was a strap that conveniently held the waist guns out of the way on the ground, which appeared to be original equipment. That wouldn't have slowed me down, but the cable next to it with nice Nicopressed fittings on either end did. Since I didn't bring my Nicopress kit with me, I figured it would be tough to cut the cable and then replace it at the end of the flight. That, and the mini-tool doesn't have a good wire cutter. It was a shame too, since at one

point in the pattern I could have easily drawn a nice bead on the F-22...er...F/A-22...oh wait, it's back to F-22...that was entering the pattern. The nose flexible guns were similarly tied down.



Right side waist gun



Left side waist gun

Even with all of these restrictions, it was still quite amazing all of the things that we WERE allowed to do during the flight. Because the B-17 was built as a combat bomber and not an executive transport, it seems that many passengers get off at the end of the flight bleeding significantly from some part of their body that made rapid contact with some protruding airplane part when the pilot managed to find a gust. I think all of our group got out unscathed, but that was mostly due to the extensive training in the TPS curriculum in "holding on" and "bracing yourself" any time you are not strapped into a seat somewhere.

Completeness

Virtually no aircraft surviving at the end of World War II went straight to a museum to be preserved in its original state. After all, each was just another airplane, just like so many thousand others. A few stayed on active duty, with the others either meeting the scrap yard's axe or finding employment on the surplus market in some civilian role. As a civilian aircraft, all of those turrets and other

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military stuff were just added weight and drag, and thus were typically discarded.

Upon becoming a flying museum piece, these items are re-installed as they are found, but they're not exactly filling the shelves at Costco, so finding original equipment can be tough. The restoration is on-going, and is by no means complete. Anybody got a lead on a B-17G bomb bay door gearbox? They could use one....

The most obvious thing missing from the airplane is the guts of the top turret. This was not so much due to unavailability as much as operational expediency. One of the popular activities aboard the *Aluminum Overcast* is to stand behind the pilots and watch them do that piloting thing. However, the only place where you could stand and watch the pilots just happens to be where the guts of the upper turret would be. With the turret in place, there is little room for anyone in the cockpit other than the pilots in the seats and the gunner in the turret. Not only that, but the turret significantly blocks traffic between the cockpit and the bomb bay and points aft. Thus, the decision was made to leave the guts out. The Plexiglas portion of the turret is installed, so you can still stick your head up in there and see all around the top of the airplane.



What's left of the top turret

Something else I thought was missing was some sort of sighting device for the chin turret. The control handle was installed, but I couldn't find any suitable method for aiming the turret. I doubt it was done simply by watching tracers.

More subtle items were missing, such as the navigator's astrodome, some of the bomb release boxes, the wiring to said boxes, the wiring to much of the radio equipment, and no telling how much else. From looking at other airplanes, we also suspect that a lot of the empty space was filled with oxygen bottles that were not installed.

Seats

Even though we seem to spend a lot of the flight up walking around, a fair question is where are suitable seats provided. Of course, there are the original seats for the pilot, co-pilot, bombardier, navigator, radio operator, and tail gunner (even if we weren't allowed to sit there). I hesitate to call the ball turret a "seat". Two aft facing seats were added immediately behind the pilot and co-pilot.

There were two extra seats in the radio compartment, and three troop seats lovingly stretched out in the waist gunner area. You can see these in the panoramic interior photos posted at <http://www.b17.org/flight/interior>.

Headsets were only used in the cockpit area, even though there appeared to have been plugs added at different locations throughout the aircraft, probably for use by the crew. Otherwise we wore ear plugs and yelled at each other.



View from the waist gunner's window immediately after takeoff

Construction

The construction of the airplane was very interesting in that very little of the primary structure was covered. It's all just hanging out there for you to see. Looking closely, the primary structure is aluminum in a semi-monocoque design. In a pure monocoque structure, the skin carries all of the loads, much like the shell of an egg. Rather than make the skin thick enough to carry all of the loads, the semi-monocoque design strengthens and stiffens the skin with stringers and bulkheads. Part of the benefit of this method is that the skins can be made thin enough (typically .032 in this case) to be wrapped around the structure. If the skins were thicker, they would need to be formed or pressed to the right shape, much like auto body panels. The skin carries the shear loads. The stringers and bulkheads carry tension and compression loads, and also support the skin to prevent the skin from buckling.

The stringers were basically an "L" shape, with the base of the "L" riveted to the skin. An interesting note was that the end of the vertical leg had a bulb in the cross section. This put a little more material right where it would increase the strength greatly without adding very much weight. Looking at other sources, it appears this stringer design was actually fairly common in aircraft. "Better Strength Through Geometry!"

Another subtle note was that the stringer thickness could be seen to change in the waist gunners compartment. As you proceeded farther aft, the stringers reduced in thickness, presumably because the loads were decreasing toward the tail. This little detail probably saved a good chunk of weight, not to mention removing the weight right from the area where it is least desirable (at the tail).

While aluminum was the primary structural material in the airplane, by today's standards there is a surprising

amount of wood in the airplane. It's not really that surprising if you remember that wood was a non-strategic material (available in great supply) while aluminum and steel were considered strategic materials (limited in supply). Wooden items include the floorboards, the ammo boxes, the radio room desk, the navigator's desk, and even the instrument panel (though you can't tell because of the black paint).

(That's it for this month! You'll have to wait until next month to work your way up to the nose section and start looking around!)

- Russ Erb

Project Police Qualitative Evaluator

H-21C, Big Bear, and Motorcyclists

Back in July 1955, Maj Vincenzi and I, along with our Crew Chief (sure wish I could remember his name) and Instrumentation personnel with the Fairchild Camera, were recording take-off and landings in the H-21C at Big Bear Airport (elevation 6752 feet).



It was rather uneventful except for one landing. We came in slow and pretty steep. Vincenzi flared at a pretty high angle, even for an H-21. We were about 3 feet above touchdown and fell. My comment was, "We must have hit the vortex ring state." The comment was basically ignored. Partially because we could not prove it at the time, did not wish to repeat it, and very few people even knew what the "Vortex Ring State" was.

As you know Vortex Ring State is defined by disc loading and attitude of the rotor to the direction of flight. (The air flow does not go up through the rotor as in autorotation or down through the rotor as in hovering and forward flight. It just re-circulates through the rotor.) The rotor must have airflow perpendicular to the rotor tip-path plane

When we defined the dead-man's curve we never went below 35 knots although we were supposed to start at hover. There was not enough inertia in the rotor to maintain rpm for a full 1 second pilot delay at 35 knots. We circumvented the vortex-ring state (and lost about 1000 feet altitude).

With the tandem rotor configuration we did tend to initially fall tail first because of the wake of the front rotor.

In the case of the landing described above, the helicopter was at an extreme nose up attitude and the rotors may have been perpendicular to the flight path momentarily. But like I said, we did not pursue analyzing the landing.

Later a friend of mine, Emmit Koelle, was project engineer with Bob Ferry testing heavy-weight takeoffs

sideways (side by side rotors, "lateral tandem" configuration) with the H-21. They stayed away from transition into autorotation and did no engine failure tests. Luckily their engine failure was after the tests were over.

I would guess all the helicopters have quickly skirted the Vortex Ring State until the lateral tandem, high disc loading V-22 was flown by a high-time fixed-wing, low-time helicopter pilots.

On to Big Bear and motorcyclists: During the testing at Big Bear, **Alice** (my wife) and **Robert** (our 8-week old son) were in Arlington, TX. After furlough, etc. I decided I would take them up to see Big Bear Airport in our 1953 Studebaker Champ.

Unfortunately in December they had quite a bit of rain at Big Bear and the cinder "taxiway" was far softer than I thought. I got stuck in about 6 inches of cinder mud.

Fortunately a bunch of young men were at a cabin nearby and saw our plight. They came over and couple of them took Alice and Robert over to the cabin. The others pushed the car out of the mud.

I drove over to the cabin where I saw a bunch of motorcycles. At that time, a few motorcyclists groups were beginning to get infamous reputations and I had some mild trepidations.

They gave us hot chocolate, etc. and let us warm up. (The Studebakers had an under the front seat heater without much capacity.) One young man even changed Robert's diaper while Alice sipped her hot chocolate by the fireplace. (From then on she always wanted a fireplace. I never did get her one of her own.)

It turned out that the young men came to the Big Bear cabin quite regularly for weekends. They invited us to visit them whenever we felt like getting away from Edwards for a day or a weekend.


When I inquired what they called themselves they replied, "**Hell's Angels.**"

- **Lee H. Erb**

EAA Chapter 1000 Det 5, Arlington, TX
aka Erb the Elder

Web Site Update

As of 10 Dec 2006, the hit counter stood at **112226**, for a hit rate of about 22 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

Dec 19: EAA Chapter 1000 Annual Festivus Celebration, 6:00 p.m., Kommandant's Kwarters. Quartz Hill CA. (661) 609-0942

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

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

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

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

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

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

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

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

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

Apr 3: EAA Chapter 49 Monthly Meeting, 7:30 p.m., General William J. Fox Field, Lancaster, CA. (661) 948-0646

Apr 10: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., High Cay, 4431 Knox Ave, Rosamond CA. (661) 609-0942

Apr 17-18: B-17 *Aluminum Overcast* hosted by EAA Chapter 1000, General William J. Fox Field, Lancaster, CA. (661) 609-0942

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

May 19: Sixteenth Annual Scotty Horowitz Going Away Fly-In, Rosamond Skypark (L00), Rosamond CA. (661) 256-3806

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

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!

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MUROC EAA CHAPTER 1000 NEWSLETTER

C/O Russ Erb

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

ADDRESS SERVICE REQUESTED

THIS MONTH'S HIGHLIGHTS:

PPO PARTY 19 DEC IN QUARTZ HILL

WHAT YOU MISSED ON PROJECT TOUR

SKYWAGON BECOMES ELECTRIC?

LONG AWAITED B-17 FLIGHT REPORT



The Leader In Recreational Aviation