



THE LEADING EDGE

NEWSLETTER OF MUROC EAA CHAPTER 1000

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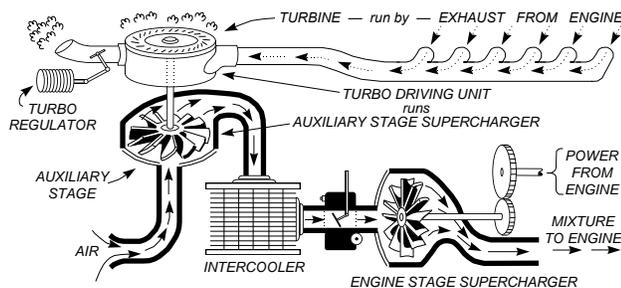
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November 2003

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:



We're Here To Pump...You Up!
Turbo- and Super-chargers:
An Engineering Perspective
Speaker: Erbman
Tuesday, 18 November 2003
1700 hrs (5:00 PM Civilian Time)
USAF Test Pilot School Auditorium
Edwards AFB, CA

So you're on takeoff roll at Big Bear (elev 6748) after a nice large lunch and you notice that your aircraft's performance isn't quite as sprightly as it was when you took off from Fox (elev 2347) that morning. As you start your climbout at 50 to 100 feet per minute, you start questioning the wisdom of having that second dessert. Thank goodness they were nice enough to provide a lake to circle over and gain altitude.

You're slightly confused because the last time you were at Big Bear with your buddy in a Beaver you had no trouble taking off at all. After calling to ask him what his secret is, he laughs and tells you it's because the R-985 in the Beaver has a supercharger on it.

Supercharger? Isn't that something you put on dragsters to give them more power? Is that related to the "turbocharger" the Kommandant has in his Volvo Project Police staff car? What does that have to do airplanes?

Well, my fellow gear-head wannabees, superchargers and turbochargers (or turbosuperchargers) were in use in aviation long before they were considered for use in more terrestrial conveyances. They served two primary purposes in aircraft engines—to improve performance at altitude and to improve mixture distribution in large engines.

Sensing this might be of interest to us EAAers, your Vice Kommandant and Schmoozemeister tried to get Tim Allen to come speak to us about this "More Power!" option, but his rates were a little in excess of the supersize value meal at Burger King. Therefore, the best he could do was to get our own Erbman to come speak to us about the engineering aspects of supercharging and aeronautical engines.

Don't come expecting a demonstration of how to install a belt-driven supercharger in your Cessna 310—that might be a future program from Bill Irvine, with a repeat session for those who missed the first (after all, he has to do it twice!). No, instead we're going to talk about the benefits and drawbacks of supercharging your engine. Did you know that in some circumstances, supercharging will decrease your power available? We'll also talk about other maintenance and operational issues involved with supercharging. For instance, did you know that installing a turbosupercharger is a great way to ensure that your friendly local A&P will have a steady retirement income?

We'll start out as always with our schmooze time in the lounge, followed by a "Death By Powerpoint" presentation from Erbman in the auditorium. Bring your own stories and questions about supercharging, because if you don't, who knows if we'll ever get him to shut up. Hopefully he'll run out of things to say in time for us to get over to the BK Lounge before they close...

Last Month's Meeting

EAA Chapter 1000

Scobee Auditorium

USAF Test Pilot School, Edwards AFB CA

21 October 2003

Gary Aldrich, Presiding

Lamb...Mike Lamb. That's right. The tire, the man, the legend. Chapter 1000 was treated to a rare evening of entertainment as Mike Lamb shared the saga of the Lamb Tire, well known to most of the EAA community.

I won't attempt to tell the whole story here, but let me summarize:

In 1983, Mike was building a KR-2 and no tires were available that met his personal requirements. He was running a motorcycle parts business at the time and had contacts with a tire manufacturer in Taiwan (Cheng-Shin

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Tire Co.). Being the foolhardy yet visionary entrepreneur, Mike mortgaged the farm and committed to buying 50,000 tires over a five- year period. Big success, lots of money. Yaddi, yaddi, yadda. The rest is history. (I did say summary) Look for Mike's book due out in paperback this holiday season (No, not really, but not a bad idea).

Mike also shared his views about lawyers (very colorful), the patent process (very insightful), various competitors and how to deal with them (very entertaining), and his latest projects which include a second Harmon Rocket with retractable tricycle gear and potentially turbine-powered. Mike is a long-time homebuilder and his previous projects include a highly modified KR-2 and a customized Harmon Rocket (would you expect less?).

"Victory" was declared by the **Kommandant** after Mike said "Well, that's pretty much it. I hear you buy the speaker dinner. Let's go." We retired to the BK lounge and bestowed Mike with a "super-size" value meal, which is much cheaper than a tacky plaque.

It's always a pleasure to visit with Mike as we live vicariously through his adventures and exploits. Our sincere thanks and appreciation to Mike and to learn about Lamb tires. The story gets better with each retelling.

- Kent "Cobra" Troxel
Secretary

Kommandant's Korner

This month finds the mighty Skywagon still sidelined. With any luck, she'll be back to terrorizing the SoCal skies by the first of the year. In the meantime, I've been splitting my time between the Craftsman display at Sears and sweeping out my empty hangar. On the bright side, the local avgas concession has loosened its grip on my credit card.



Since I can't regale you with an exciting aviation story, I may as well slip into "**Flying Tutor**" (as the Brits would say) mode and remind you flyers out there that we are entering the season when crisp mornings and shorter periods of daylight prevail. Those chilly early hours are a welcome change from the legendary heat of the desert; but hold challenges for the unwary aviator. If your trusty aerial steed spends its winter nights outside (or even in an un-heated hangar), the cold and moist weather patterns may demand extra pre-flight action. Our lower temperatures, while tame by most standards, can still sap your battery of the power demanded by your engine's starter. Couple this wimpy performance with oil that's the consistency of molasses, and you may find yourself sitting in a very quiet airplane. Repeated attempts at a cold start could result in a flooded engine and a very dead battery...especially if that battery is getting on in years. One solution is to keep the battery on a "trickle" charger to maintain its charge level. There are several models of these chargers sold...with a larger selection for 12 volt systems. Most have circuitry designed to prevent

overcharging and damaging the battery over an extended period. An alternative plan to help guarantee a strong battery is to do what I used to do with the battery in my old '72 Vega. When the temperature fell into the 'teens and below in the Syracuse winter, I would pull the battery and take it inside at night. The 5 minutes it took to re-install it in the morning was less time than cranking until battery death, digging out the jumper cables, and begging a neighbor for a jump start.

Speaking of oil, the big engine makers recommend pre-heating the engine and/or engine oil before starting whenever the temperature is below about 30 deg F. Besides the hard-cranking issue, engine wear during start is significantly increased when all that cold-soaked machinery is forced to wake up. The climate here in the Antelope Valley doesn't really justify the expense of permanently installed heaters like those used in colder areas. However, most of us have a common "drop-light" with a 60 or 100 watt bulb, an old blanket, and an extension cord. A chilly engine can be warmed significantly by shoving that light up a cowl flap and covering the ol' girl's nose with a blanket. Of course, you could pull the same trick with the oil as I mentioned with the battery. Alaskan bush pilots commonly drain the engine oil on the coldest nights and snuggle up with it in their cabin. Kinda messy...and not very romantic, but it often spells the difference between a flight back to civilization and turning into bear food. Many utility aircraft, the Skywagon included, were offered with an interesting option to dilute the engine oil with gasoline, using an electric pump controlled from the cockpit. This method of limbering up the oil was mostly a last resort since the number of times it could be done before an oil change was limited. (*the gasoline evaporated out the next time the oil came up to operating temperature*)

One more item and I'll get off my soap box. That item is **frost**. How many times have you arrived at the tiedown to find a nice white layer of the stuff all over the airplane? And, how many times have you looked at the smooth, somewhat fuzzy surface and rationalized "that can't have a real effect on performance...can it"? Well, the answer to that one is, YES, it can most definitely have a serious effect on takeoff performance. The slight change in surface roughness and/or shape caused by the frost is often enough to increase the required takeoff distance to just over what's available. There really is no alternative in this situation. The frost comes off, or you don't fly...period. My favorite technique is to use the "natural" method of frost removal. I figure, "Mother Nature put it there, she can take it off". This technique works especially well when there is a coffee pot nearby with a warm place to sit and watch the more impatient pilots scrape ❄ off the freezy stuff with their credit card.

So, there you have it...winter wisdom.

Fly safe, check six, and stay warm!

- Gary Aldrich
Kommanding





Young Eagles Update

Hi all, I've been a bit remiss in getting the Young Eagle Rally reports out in a timely manner. Here are the reports for the last two rallies, held in Rosamond and Tehachapi.

First, the September 20 Rally

in Rosamond:

An even dozen pilots showed up to introduce 68(!) new young folks to the excitement of aviation at the Rosamond Skypark on September 20, 2003. As in Lancaster in August, weather was near perfect with single digit winds and tolerable temperatures prevailed throughout the rally.

Ground Crew:

Victoria Rosales	Registration and Certificate Production
Karen Steinaway	Registration, Certificate Production and Presentation, and Photography
Mary Beth Gates	Certificate Presentation and Photography
Miles Bowen	Registration, Certificate Presentation, and Photography

Pilots/Aircraft

Pilot	Type	#YE
Ed Mckinnon	Mooney M20K	14
Olaf Landsgaard	Diamond Katana	5
John Bush	Cessna 140	3
Don Gates	Mooney M20C	3
Kim Cummings	Cessna 172	6
Christina Visco	Cessna 120	3
George Sandy	Cessna 177RG	6
Shel Simonovich	Cessna 150	4
Bob Souza	PA 28-161	14
Con Oamek	Bonanza F33A	4
John Manduca	RV-6A	3
Paul Rosales	RV-6A	3

Herb flew 2 of these Young Eagles on Sunday, the day after the actual rally. Herb also recently sent me the names of 2 more Young Eagles he flew on August 2, so we'll count an even 70 for this rally.

Special thanks also to **Olaf Landsgaard** and **Jim Payne** for organizing the Rotary Club pancake breakfast, free for our Young Eagle pilots and ground crew.

Now for the MEGARALLY (!!) that was held in conjunction with Tehachapi's Centennial of Flight Celebration last Saturday, October 18, 2003. I believe the turnout surprised everyone, as 134(!!!) Young Eagles turned out for their introduction into the wonders of flight. Great weather prevailed, although it did get a bit turbulent in the afternoon as it often does in this part of the world.

We thought this might have been a record rally, so **Mark Pestana** contacted YE Headquarters and received the following reply:

"Hi Mark,

The largest one-day total is 867 flown by a number of Chapters at a Boy Scout Camporee several years ago in Ohio. It took them the better part of a year to plan the event.

However, 134 is a significant number and represents a great day for your Chapter. Most Chapter events are under the 100 mark, so I'd say your Chapter is above average!

Thanks for your support of Young Eagles. I look forward to continuing our work in the future!

Steve Buss

EAA Young Eagles."

In any case, 134 is a record for Chapters 49 and 1000, at least on my watch, and everyone who participated deserves a hearty THANK YOU. The pilots and aircraft flying Young Eagles at Tehachapi were:

Pilot	Type	#YE
Ted Blaine	Comanche 250	14
Tim Cahoon	Cherokee 180	17
Herb Carlson	Cessna 172	11
Eric Hansen	Cessna 195	21
Pierre Hartman	RV-6	1
Ken Hetge	Lancair ES	9
Bob Hoey	BD-4	1
Mike Lerner	Cessna 180	5
Con Oamek	Bonanza F33A	8
Jim Roberts	Cessna 150	7
Ted Rutherford	Harmon Rocket II	4
George Sandy	Cessna 170B	10
Shel Simonovich	Cessna 150G	6
Bob Souza	PA28-161	20

Total on October 18:.....134

There were two Young Eagles who showed up after we declared the air too turbulent to fly kids, so I met them at the airport Sunday morning and gave them their rides in my 170. **Herb Carlson** also flew one on Sunday at Fox Field in his Cessna 172, bringing the October total to 137.

A special welcome goes to **Ted Blaine, Tim Cahoon, Eric Hansen, and Mike Lerner** who are first-time Young Eagles pilots! Welcome aboard guys; I look forward to seeing all of you at future rallies.

The ground crew (the REALLY hard workers) participating in this rally were as follows:

Marlene Zebro	Certificate Presentation and Photography
Maxine Cahoon	Aircraft Assignment
Mary Beth Gates	Certificate Presentation and Photography
Lucia Sandy	Aircraft Assignment
Tim Wallace	Certificate Presentation and Photography
Miles Bowen	Registration and Certificate Printing
Ken Hetge	Aircraft Marshaling
Mike Lerner	Aircraft Marshaling
Lori Ann Theisen	Made a trip to K-Mart when we ran out of film!

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Della Dusel	Food Service
Shirley Cummings	Food Service
Kim Cummings	Food Service

Special thanks also to **Tim Wallace** who coordinated the **Civil Air Patrol** to provide automobile and aircraft parking services.

Many thanks also go to all the members of the **Tehachapi Society of Pilots** who helped organize and carry out this rally. I want to especially thank **George Sandy**, President of the Tehachapi Society of Pilots and his wife Lucia for organizing and promoting the Tehachapi Centennial of Flight Celebration.

To date, 49 pilots have flown **631** Young Eagles for Chapters 49 and 1000 so far this year. Here they are in alphabetical order:

Mark Backes	1	John Manduca	3
Paul Baldwin	4	Ed McKinnon	60
Michael Barnes	3	Con Oamek	29
Ted Blaine	14	David Orr	3
Miles Bowen	49	Wen Painter	15
John Bush	24	Kirk Peek	5
Tim Cahoon	17	Arnie Peterson	4
Herb Carlson	45	Raymond Powell	7
Lynn Crawford	3	Kevin Reilly	9
Kim Cummings	26	Paul Reukauf	5
Geoffrey Dille	5	Jim Roberts	16
Doug Dodson	8	Paul Rosales	18
John Fisher	2	Ted Rutherford	4
Don Gates	26	George Sandy	30
Frank Haertlein	8	Jack Schweizer	12
Eric Hansen	21	Shel Simonovich	25
Pierre Hartman	1	Bob Souza	36
Ken Hetge	9	Doug Triplat	3
Bob Hoey	5	Lee Trlica	1
Bill Hoverman	12	John Tumilowicz	2
Steve Ivey	11	Beverly Vander-Wall	5
Mike Lamb	1	Dean Vander-Wall	6
Olaf Landsgaard	6	Christine Visco	21
Mike Lerner	5	Bob Waldmiller	2
Ozzie Levi	4		

Total thus far in 2003: **631**. CONGRATULATIONS EVERYONE!!! It looks like we have already blown our goal of 500 right out of the water. However, that is no reason to slack off. There has been quite a surge worldwide in last few months. On October 22, 2003, the EAA registered the 990,000th Young Eagle. They are adding 800 to 900 to the list EVERY DAY. It looks like the one millionth Young Eagle will be registered in very early November. The official one millionth Young Eagle will be chosen by being the one millionth to be entered into the World's Largest Logbook. The lucky Young Eagle and his/her pilot will be invited guests of the EAA at Kitty Hawk on December 17, where the Young Eagle will receive another flight from Chuck Yeager.

Although it is likely that the millionth Young Eagle will be flown before our rally next month at Fox Field in

Lancaster, you still have a chance of being that pilot if you don't forget that you can fly Young Eagles outside of an organized rally. If you need registration forms or certificates, please let me know. If you do fly some Young Eagles on your own, send the forms directly to Oshkosh and just provide me with their names and when and where they were flown. Also, these WILL count toward the awards given by Chapter 49 for the most Young Eagles flown in 2-place and 4-place aircraft.

Remaining Rallies for 2003

Nov 15	Fox Field Terminal Building	9:00am
Dec 13	Cal City Muni, Terminal Building	8:00am

Now for the hard part. This is my third year as Young Eagles Coordinator for EAA Chapters 49 and 1000. In that time over 1500 Young Eagles have been flown in the area. I threatened to end my term last year, but I decided to stay in until the Program had reached its first goal of one million Young Eagles. That goal is firmly in sight and I find that I must finally turn the reins over to some new blood.

EAA has already assured us that the program will continue. I am not aware whether or not they have formalized any new goals, but I know that they will, and I look forward to continuing to support Young Eagles.

Being Young Eagles Coordinator is a lot of hard work, but I doubt there is a chapter position that is more rewarding. If you are interested, please contact me at cessna170bdriver@yahoo.com, or one of the Chapter Presidents: **Scott Liefeld** (Chapter 49) at Pietman@qnet.com, or **Gary Aldrich** (Chapter 1000) at gary.aldrich@pobox.com.

- Miles Bowen

EAA Chapter 49/1000 Young Eagles Coordinator
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A Pilot's Submission to the Civil Aviation Safety Authority (CASA)

(that's the Australian version of the FAA...submitted by the Kommandant from the Skywagons list)

On the phone Ron seemed a reasonable sort of bloke. He reminded me of the need to do a flight review every two years. He even offered to drive out, look over my property and let me operate from my own ALA (authorized landing area). Naturally I agreed to that.

Anyway, Ron turned up last Wednesday. He said he was a bit surprised to see the plane outside my homestead because the ALA is about a mile away.

I explained that being close, this strip was more convenient, but there are power lines crossing it at about midway but it's really no problem to land and take-off because at the half-way point you are always on the ground.

For some reason Ron seemed nervous. So, although I had done the pre-flight inspection only four days earlier, I

decided to do it again. Because he was watching me carefully, I walked around the plane three times instead of my usual two. My effort was rewarded because the colour returned to Ron's cheeks - in fact they went to a bright red.

In view of Ron's obviously better mood, I told him I was going to combine the test flight with my requirement to deliver three poddy calves from the home paddock to the main herd. After a bit of a chase I caught the calves and threw them in the back. We climbed aboard but Ron started nagging about weight and balance calculation. Of course I knew that sort of thing was a waste of time because stock likes to move around a bit. However, I did assure Ron that I keep the trim wheel Araldited to neutral so we would always remain stable.

Anyway, I started the engine and cleverly minimised the warm-up time by tramping hard on the brakes and gunning her to 2,500 rpm. I then discovered that Ron has very acute hearing. Through all that noise he detected a metallic rattle and demanded I account for it. Actually it began last month and was caused by a screwdriver that fell down a hole in the floor and lodged in the fuel selector mechanism. The selector can't be moved but because it was on 'All tanks' I figured it didn't matter.

However, as Ron was obviously a nit picker, I blamed the noise on vibration from a stainless steel thermos I keep in a beaut little possie between the windshield and the magnetic compass. My explanation seemed to relax Ron because he slumped back in the seat and looked at the cockpit roof. I released the brakes to taxi out but unfortunately the plane gave a leap and spun to the right, "Hell" I thought, not the starboard wheel chock again. The bump jolted Ron back to full alertness. He looked wildly just in time to see a rock thrown by the propwash disappear through the windscreen of his new Commodore.

While Ron was busy ranting about his car, I ignored his requirement that we taxi to the ALA and instead took off under the power lines. Ron didn't say a word, at least not until the engine coughed at lift off, then he screamed, "Oh God!" "Now take it easy," I told him firmly, "That often happens on take-off and there is a good reason for it." I explained patiently that I usually run the plane on standard MOGAS but one day I accidentally put in a gallon or two of kerosene. To compensate for the low octane of the kerosene I siphoned in a few gallons of super MOGAS and shook the wings up and down a few times to mix it up. Since then the engine has been coughing a bit but in general it works just fine.

At this stage Ron seemed to lose all interest in the flight test. He pulled out some rosary beads, closed his eyes and became lost in prayer.

I selected some nice music on the HF to help him relax. Meanwhile I climbed to my normal NOSAR NODetails cruising altitude of 10,500 feet.

On leveling out I noticed some wild camels heading into my improved pasture.

I hate camels and always carry a loaded .303 carbine clipped inside the door. We were too high to hit them, but as a matter of principle, I decided to have a go through the open window. The effect on Ron was electric. As I fired the first shot his neck lengthened by about six inches and his eyes bulged like a rabbit with myxo.

In fact, Ron's reaction was so distracting that I lost concentration and the next shot went through the port tyre. Ron was a bit upset about the shooting, probably one of those pinko animal lovers - I thought, so I decided not to tell him about our little problem. Shortly afterwards I located the main herd and decided to do my fighter pilot trick. Ron had gone back to praying when, in one smooth sequence, I pulled on full flap, cut the power and started a sideslip down to 500 feet.

About half way through the descent I looked back to see the calves gracefully suspended in mid air. I was going to comment on this unusual sight but Ron had rolled himself into the fetal position and was emitting high pitched squeals.

At about 500 feet I leveled out, but for some reason we continued sinking. When we reached 50 feet I applied power and that helped quite a lot. As luck would have it, at that height we flew into a dust cloud caused by the cattle and went IFR. I made a mental note to consider an instrument rating as soon as the gyros are repaired.

Suddenly Ron's elongated neck and bulging eyes reappeared. His mouth opened wide, very wide, but no sound emerged. "Take it easy," I told him. "we'll be out of this in a minute."

Sure enough, about a minute later we emerged; still straight and level and still at 50 feet. Admittedly I was surprised to notice that we were upside down. This minor tribulation forced me to fly to a nearby valley in which I did a half roll to get upright again.

By now the main herd had divided into two groups leaving a narrow strip between them. "Ah!," I thought, "there's an omen. We'll land there."

Knowing that the tyre problem demanded a slow approach, I flew a couple of steep turns with full flap. Soon the stall warning horn came on and so I knew we were slow enough. I turned steeply onto a 75 foot final and put her down. Strangely enough, I had always thought you could only ground loop in a tail dragger.

Halfway through our third loop Ron at last recovered his sense of humor.

Talk about laugh.... I've never seen the likes of it; he couldn't stop.

We finally rolled to a halt and I released the calves.

I then began picking clumps of dry grass. Between gut wrenching fits of laughter Ron asked what I was doing. I explained that we had to stuff the port tyre with grass so we could fly home.

It was then that Ron started running.

The last time I saw him he was off into the distance, arms flailing in the air and still shrieking with laughter.

I later heard that he had been confined to a psychiatric institution.

Anyhow that's enough about Ron;

I just got a letter from CASA withdrawing, as they put it, the privilege of holding a license to fly.

Now I admit that I made a mistake in taxiing over the wheel chock but I can't see what else I did that was so terrible.

Can you?



Pirep: Bearhawk 232PF, Pat Fagan's Bird

(This airplane, built by Pat Fagan of Pearblossom, EAA Chapter 49 member, was the Grand Champion at Copperstate this year. This Pirep reprinted by permission from Budd Davisson's web site <http://www.airbum.com> -go there for all sorts of cool stuff to read.

If you think this newsletter has too much Bearhawk and Skywagon stuff in it, you have two choices—1) take over as newsletter editor, or 2) submit stuff on your own favorite airplane. You only have yourself to blame. Well, mostly...

To keep this thing from rambling on I'm going to try to abbreviate it and mention high points only, although by the time you're done reading this, you'll find it hard to believe it's abbreviated.

Pat took an incredible amount of time and energy to come over, do a bunch of flying, sweat his butt off and, in general, play the ambassador role for the Clan Bearhawk. Not many folks would do that, and I, for one, thank him mightily for it.

We flew about 2.5 hours together and on top of that, he hopped another five or six passengers, including the AZ Redhead (*that's Mrs. Davisson*) who won't stop talking about it.

Pat's airplane

He has done a terrific job of detail work. Every little piece, like the fairing strip that captures the side of the windshield and goes under the front edge of the top door half, is perfectly straight, edges smooth and rounded, bends just right for the application. The ailerons fit in the wing with barely 1/8" gap anywhere. The engine baffles are works of art



Pat Fagan of Pearblossom, CA took six years building his BH from scratch

in themselves. The airplane is very, very well done without being one of those prissy, I-chromed-everything-in-hopes-of-winning-an-award airplanes built primarily for going to air shows. The airplane just feels "right" and ready to be used.

The three-blade Hartzel in front of the Bob Barrows 0-540 is impressive looking and the combination runs like

a sewing machine. The vibration level is so low it's almost scary and it starts on the first blade every time.

The interior is classic Bob Barrows (fabric inside the fuselage everywhere) but you don't notice the sidewalls are fabric because they are so smooth and colored to match everything else.

His cooling eyeball vents, fed by NACA ducts, work really well and are among the ideas to be copied.

Cockpit

I sat with about four inches of headroom and I'm not sure I'd want to sit any higher except in serious short field work.

Several people have commented on how much the nose cuts into the visibility but no one has commented on how quickly the nose tapers out of view or how the shape of the fuselage lets you move your head to the side and almost see around the nose. On the taxiway I could see all but the middle three or four feet of the taxiway by moving my head. A very shallow turn away from me (I was on the right with the throttle and stick in the "correct" hands) uncovered the entire taxiway. I'll bet I wasn't turning much over ten degrees. The airplane gives the impression of being blind but it really isn't.

Pat has flown my airplane so he now knows what "blind" means.

I was immediately struck with the feeling that the stick was a little far away from me and I had to reach for it. The seat was fairly far forward and still I felt that way. It'll be interesting to see if others comment. We'll monitor that because it's an easy thing to change via linkage or the step in the "Z" of the stick.



The entire instrument panel is machine turned and sprayed with clear lacquer

The overall feeling of the cockpit, especially with the skylight, is one of open, spaciousness. I just can't think of anything I'd do to improve upon the general visibility and comfort. I'm 5'10" and 185 pounds. I don't think anyone would feel crowded until they hit around 6'4" and 250 pounds, but, if you're that big, you're used to feeling crowded. The two of us definitely were not intruding on the other's space and, for you Alaskan types, I don't think heavy jackets would change that.

Taxi

Taxiing is a simple matter of moving your feet and pointing the airplane. The ratio was just a little long so it

behaves in a fairly subdued manner and is easy to keep up with. Also, there was no feeling of inertia wanting to keep the airplane turning. Very easy to taxi. At least as easy as a Citabria.

Takeoff

Wow, is all I can say! WOW!

This was truly bad day to be flight testing airplanes because we never saw temps under 95 degrees once and they were usually higher than 100. The worse part, however, was that we had a 3-4 knot quartering tailwind most of the time, which really screws with tailwheel airplanes. It doesn't sound like much, but because of local noise abatement procedures, I operate in them a minimum of an hour a day, I'm here to tell you that they make a serious difference in both performance and handling. Still, that first takeoff stood my hair on end.



The interior is so subtle and well done you don't even notice that the sidewalls are Ceconite.

We did a bunch of takeoffs and played with several variations on a theme. All of them happen so quickly that you'd be hard pressed to get in trouble before you were off the ground.

I tried a pure three-pointer, holding the tailwheel in contact until lift off and it vaulted into the air, the nose going up twenty degrees and putting us at 50 feet and racing through 70 knots before I could blink.

With the tail wind, it was hard to get meaningful measurements, but after we standardized on a short field technique that put the tailwheel just a few inches above the ground, we were seeing 250-400 feet, depending entirely on the wind. Pat did one when it must have been calm because it was noticeably shorter than the rest. Barely 200 feet. Remember this is at 100 degrees (density altitude was 4,900 ft), although we were only two guys and at full tanks most of the time. All takeoffs were made at half flaps.

Oil temperatures hampered our experimentation time. In those conditions we'd easily go up to 240 degrees doing touch and goes. At altitude (OAT was 97 degrees at 4,000 feet!) they stabilized at 225-230 depending on the power setting. Cylinder head temps came up during touch and goes, peaking at 410 but most of the time they were down around 380-390. This says that the cowling configuration will work in hot weather but the oil radiator, although big, is either too small or two are needed. This is strictly an AZ thing. Even Pat's airplane would still work well out here if you didn't thrash it the way we were doing.

The AZ demonstrator is going to wind up with two coolers, one with a straight ram scoop and maybe a shutter.

Rates of climb never went under 1300 fpm and could be pushed over 1500 feet by pulling back to 75 knots, but the nose is ridiculously high and that doesn't help oil temps. I kept track and found that even at 100 knots it was stabilizing on 1000 fpm, which fell to 850-900 fpm by 5500 feet.

Speeds

We did some two-way runs down a road that I later went out and measured with my car's odometer to verify what it showed on the sectional. Assuming my odometer was right, it was a shade over 10 miles, so we had a good distance to measure things over.

The Bob (*Bearhawk* slang for Bob Barrows, the designer) gave us some power settings to use including an rpm adjustment formula for the heat. We did two-way runs at 75% and 60%.

At 75% you can really tell the airplane is going fast and is working to do so. The nose of the wing is really down. This came out to 161 mph.

At 60%, the fuel burn dropped by 5 gallons per hour, and the speed dropped to 142 mph.

At the time, I was disappointed because that didn't match with the 135 knots (155 mph) Pat now appears to be flight planning at. Then I realized that was because we were at 4,000 feet. With the amount of power being put out by the O-540, the drag curve of the airframe falls off faster than the power curve of the engine so at the altitudes he usually flies, 8-10,000, the airplane is much more efficient.

We're going to continue to say the airplane is a 150 mph airplane, but it really needs some fairings to go fast low. Also, Pat hasn't played with reflexing the flaps yet, which may yield some useful gains. To any who care, Pat has 700 x 6 tires, which are big, but not as big as Bob's 8.00's.



Pat used to fly fire fighting tankers for Aero Union and his BH is painted in a tanker scheme utilizing his BH plans number.

Handling

We played a little with phugoids, rudder-doublers and some of the handling stuff and found the airplane is dynamically positive in pitch but not overly so—pull the nose off trim ten knots and let go and it'll start back to level but is in no hurry to do so. It damps eight of the ten knots and most of the altitude gained in the first cycle and then takes another three to totally damp out, but it finally does. This was at a forward CG location.

THE LEADING EDGE

Break-out forces (how much you initially push to make things happen) are just a little higher than I'd like (I fly a Pitts, so I'm not a good judge) but the actual aileron pressures and response are really pleasant. It does exactly what you want it to do as soon as you ask it without being too quick. The pressures are lighter than Cessna's but the response and roll rate is much higher. I tried some rapid reversals from a forty-five degree bank one way to the same bank the other way while verbally timing it and I'd say the roll rate is around 90 degrees a second or 30-40% higher than a Cessna. Trim it up hands off, and you can go to sleep it is so stable.

The rudder on Pat's airplane felt noticeably different than on Bob's two prototypes. As I understand it, Bob redrew the aerodynamic balance on all the plans and reduced the size of the balance. Originally the rudder was extremely light with little break-out force, but Pat's is perfectly matched to the ailerons and rudders. In fact, the controls are as well balanced as you'll find on any airplane of any type.

Stalls

I did a lot of messing around at stall and sub-stall speeds. Clean it bobbles a little and mushes at about 42 knots. With full flaps (Pat isn't getting a full 50 degrees) it comes down closer to 35 knots. Using power to hold altitude, I ran it down under 30 knots and made turns left and right and it showed no tendency to do anything stupid.

I did some deep stalls (full stall and left the stick nailed full back) and played with the ailerons and rudder. Both are still working and with the stick full back I could execute gentle turns left and right. If I got aggressive with the ailerons you could feel them nibbling and getting ready to stall.

Since we were going to try some slow approaches, I set it up at 40 knots with power and drove it around trying steeper and steeper banks and didn't feel it wanted to do anything but fly. I did the same thing at 35 knots with the same result.

As the airplane goes under 45-50 knots the controls all get softer, as you'd expect, but that's largely an illusion as they are still working but need bigger deflections to make things happen the way you want them to.

One thing that did make slow flight difficult and was to haunt us a little when playing with slow approaches was that we ran out of trim at around 60 knots. This meant we were holding increasingly heavier stick forces the slower we went. The forces never became burdensome, but they were making it difficult to stabilize at super slow speeds.

Pat has his trim linkage at the very end of the trim arm on the elevator but has another hole further in. He's going to move the arm in, which will increase the trim tab travel and see if that gives him a slower minimum trim speed. It will make his trim more sensitive but it isn't very sensitive to begin with so it probably won't be a problem. We'll let him tell us whether it helps or is more trouble than it's worth.



What else could you possibly want or need?

Skylight Comments

Because you sit so far back in the wing, in a normal Bearhawk, visibility is of the pick-up-the-wing-before-you-turn variety. In Pat's you had to do the same thing, but as soon as a bank over 15-20 degrees was established, you could see over the down wing. It was great and something well worth doing.

Pat flattened out the top of the fuselage, getting rid of the Bearhawk Hump, which very much squares off the fuselage lines. This is noticeable all the way back to the tail but not particularly objectionable. We (AviPro) raised the stringer line just in front of the fin an inch to make the fuselage more rounded in that area and we're going to look at a way to put skylights in the fuselage without flattening it out.

To answer those who are saying, "Sky lights are entirely too hot," I have to reply that I'd agree with you, but not in this case. The tint of the skylight is such that you aren't even aware it's tinted from the inside, but not once did I even notice the sun and believe me, we had plenty. It was a perfect balance of visibility and comfort.

Landings/approaches

My first landings were all made at 50 knots at which speed the airplane is totally normal in all respects. Also, since it bleeds off to well under 40 during the flare, runway control isn't even worth talking about because you're moving so slowly. I still don't know why people ask us about a nose wheel for the airplane. There are very few taildragers that are easier to fly.

I started out with three notches of flaps but quickly decided I liked it better at full flaps because it got the nose down further and the speed bleed during flare was a little quicker. In many airplanes this would make the flare timing-critical (you have to rotate just right to keep from dropping it) but that wasn't the case here. Even at full flap (something short of 50 degrees, Pat is going to measure and let us know what he has), power-off rotation from a stabilized glide was no sweat.

When I got it down to 45 knots, the first time or two I found myself using a little power in the flare to help get the tail down because I didn't think it would rotate, but later I found the power wasn't needed. It had sufficient elevator power left to get the tail down and this was at a far forward CG location. With people in the back or a load, it will probably flare into three-point at 45 just like it does at 50.

When we got down to 40 knots on short approach things got a little more difficult because of the amount of backpressure we were holding. This wouldn't be a factor because the backpressure isn't that high but it is aggravated by the way the elevator effectiveness changes with power.

When you get down to 40 knots, the elevator effectiveness naturally diminishes but it's not anything you notice. However, both Pat and I did the same thing once a piece. We were shooting for the numbers and got just a little low and were late putting the power in. The second we hit the power (just a hint of it but too big of a hint), the tail surfaces instantly became totally effective and the amount of backpressure we were holding became too much and the nose shot into the air.

This is a pilot technique problem, not an airplane handling problem. If you hold the nose stable (this is in *Student Pilot 101*, I believe), when applying power in this situation, you don't get balloons. Next time around we didn't do that.

The balloons taught us something, however. When Pat did his, I kept my eyes in the cockpit (I hate watching crashes in which I'm actively involved) and studied the airspeed as he recovered. We were a little under 40 knots when the nose jumped and we started up hill. We were decelerating through 35 knots on the top and he kept pulling as we came down while he added power. We went down through 32 knots and arrived on the runway tailwheel first in what he thought was a hard landing but which I thought was only a little harder than usual. By the way, the airplane barely bounced, a sterling testimony to the Bob shock system.

What was of some importance during this little whoop-dee-do was that the tailwind was screwing with us, trying to shove the airplane around and at no time, even though we were hanging there at 32-35 knots, was control an issue.

Personally, I'd bet money that if we had another hour to practice, in more normal wind and temperature conditions, we'd become perfectly comfortable making 35-knot approaches.

Because of the goofy wind conditions I was never able to determine a speed at which it slid over the backside of the drag curve and began falling for the ground, thereby transferring most glide slope control to the throttle. In fact, it felt as if there was no such point and it kept flying all the way down. This will take more investigation.

In summarizing the landings, I'd say that 50-55 knots should be considered the normal approach speed and three notches used. We didn't do any landings with two notches but I'd ignore it for landing and use that position only for takeoff.

Incidentally, even though it was 100-103 degrees (runway temps probably MUCH higher) and we had a tailwind, we still turned off on the first taxiway after the threshold much of the time and that's 400 feet. With no wind, even at those temps it would have been a no-brainer. With 5 knots on the nose we could have backed into that space :-)

I'm really looking forward to flying the airplane in more user-friendly conditions. We've established that it has no serious boogie-men hiding at the bottom end of the

airspeed indicator so now it's time to figure out how best to use those capabilities.

- Budd Davisson

Project Police Aircraft Spotters Quiz

All right, here's another oddball airplane for you to identify. To further confuse you, we've shown it with two types of landing gear. Just to save you time, it isn't a misshapen DeHavilland Beaver...



As always, submit your guesses to **Evil Editor Zurg** by any of the usual means. Zurg recommends sending an e-mail to erbman@pobox.com as the easiest and most effective manner. Special bonus points for any information you can give regarding this aircraft. Links to useful websites are highly encouraged.

Web Site Update

As of 11 Oct 03, the hit counter stood at **86305**, for a hit rate up to almost 21 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

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

Feb 10: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., High Cay, 4431 Knox Ave, Rosamond CA. (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

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

Mar 16: 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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<http://www.eaa1000.av.org>**

ADDRESS CORRECTION REQUESTED

**THIS MONTH'S HIGHLIGHTS:
 REGULAR MEETING 18 NOV AT TPS
 WINTER FLYING TIPS
 BEARHAWK PIREP
 IS CASA LESS ODD THAN THE FAA?**



The Leader In Recreational Aviation