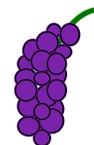


# THE GRAPEVINE



EAA CHAPTER 663 Livermore, California

Vol. XXIII, No. 11, November, 2003

There is a very fine line between "hobby" and "mental illness."

## OFFICERS

PRESIDENT	RALPH CLOUD	449-1048
VICE PRES	BILL JEPSON	408-929-1123
TREASURER	SHARON CONSTANT	510-530-0752
SECRETARY	BRUCE CRUIKSHANK	510-886-6897
PROGRAM COORD	BILL JEPSON	408-929-1123
TECH COUNSELOR	GORDON JONES	447-1549
NEWS LETTER	JOHN MEYER	455-
FLIGHT ADVISOR	BARRY WEBER	454-0627
YOUNG EAGLES	BOB COWAN	373-0555
LIBRARIAN	ALAN THAYER	582-7274
WEBMEISTER	ROGER HANSEN	830-1842

## BOARD OF DIRECTORS

BOB FARNAM	462-6355
LARRY FISH	314-9974
EARL HODGES	443-9682
DICK JENNINGS	862-2345
GEORGE STEVENS	945-6504

## MEETING AND PROGRAM

Our November meeting will take place at 7:30 P.M. on the 6th of November in the Terminal Building at the Livermore Airport. Our program for the evening will be a presentation by Jim McCormack from Jabiru Pacific on their line of Jabiru aircraft engines, of which Alan Thayer has one being installed in his Q2.

### MINUTES: GENERAL MEETING, EAA CHAPTER 663, OCTOBER 2, 2003, 7:30 PM LVK TERMINAL BUILDING LVK

Chapter president Ralph Cloud called the meeting to order.

Two guests introduced themselves, and the proprietor of InterMarker Pilot Resource and Supply gave a brief plug for his new store. He is interested in handling hardware! He wants suggestions on what items he should offer.

The minutes for the September meetings were

approved as printed in "The Grapevine"

Jeremy Constant reported for Sharon that the chapter treasury stands at \$4310.46; it was accepted by voice vote.

Business: Preparations for the chapter barbecue on October 12 was the first item. Airport Appreciation Day was a success. Sixty two potential Young Eagles were signed up. Bob Cowan made an appeal for volunteer pilots for the next rally on Saturday October 11. Plans for the Annual Dinner were discussed. The date: January 24, 2004. Place: Western Aerospace Museum at OAK north field. Speaker: Brian Shul, the Sled Driver. Cost per person: ~ \$25. Tool czar Bob Farnam reported that the purchase of the digital scales is still pending. The Dr. Alexander Lippisch aerodynamics DVD is in hand and means of watching it were discussed. Before each general meeting was suggested.

The election of chapter officers and directors went off without a hitch. Results: President Ralph Cloud, Vice President Bill Jepson, Secretary Bruce Cruikshank, Treasurer Sharon Constant. Directors: Gordon Jones, Dick Jennings, Earl Hodges, Bob Farnam, Greg Triplett, Larry Fish.

Announcement: Next board of directors meeting will be Oct. 16, at Ralph's place, all are welcome.

**Break and Program:** John Meyer introduced Bob Jans, a former chapter member with varied aviation experience in small airplanes. In an earlier program the topic was flying in South America. This time the subject was Holland. General aviation, which applies to most all of us, is truly a bureaucratic nightmare in Europe, just awful. The category of Very Light Aircraft has many signs of bureaucratic enlightenment. The only restrictions are 2 seats, gross weight of 450 Kg (990#),

but no airports (they can't seem to get everything right). No speed restrictions are leading to all those efficient light planes in Europe.

Meeting adjourned for pie.

**MINUTES: BOARD OF DIRECTORS  
MEETING, OCTOBER 16, 7:30 PM,  
RALPH'S PLACE.**

There were seven officers/directors present.  
There was no treasurer to make a report.

**The January dinner** was the first item. Arrangements were discussed. It will be pretty much a repeat of this year's dinner, with the addition of speaker Brian Shul. Costs were evaluated, and it was decided to subsidize the event to keep the price to \$20 per person, money to come from from the chapter treasury. Since the portable heaters (about \$400) is one of the major expenses, a change of venue was briefly considered, maybe the year after.

The speaker will cost \$500-600 and is 10% of his usual fee; thank you Ray McCrea. A good public address system is needed. Does anybody have one we can borrow?

Presenting the Dr. Alexander Lippisch DVD was discussed. It was decided to show an episode (there are 13) before the general meeting starting about 7 pm. A DVD player will be purchased and the program will be shown on the TV in the terminal building. This may start at the next meeting. Bill Jepson reported on the purchase of the scales. They should be in in about a month. Bob Farnam suggested the purchase of beading tools.

Bill Jepson reported that Jim McCormack from Jabiru Pacific will make a presentation on the line of Jabiru aircraft engines. An attempt will be made to reschedule Peter Garrison for May of next year when we once again have good weather and long day light hours.

Ralph announced the next meeting for Nov. 6 at the terminal building.

Meeting adjourned for pie.

Respectfully submitted, Bruce Cruikshank Sec-

retary

**DELTA HAWK DIESEL, MORE  
FROM THE NET**

(From the Canard list, by Mark Sletten)

A few weeks ago my wife and I (yes, she likes to fly and get involved with this stuff--amazing but true) flew up to Racine, WI from the St. Louis area to visit the DeltaHawk factory/R&D center/skunkworks???. We spent most of an afternoon with their chief engineer, Doug Doers.

We got to see the engine running on a test stand and installed in a flying Velocity. Go to their web site [www.deltahawkengines.com](http://www.deltahawkengines.com) to see lots more info. I'll just tell you that we were mightily impressed with the operation and people. Doug answered all our questions thoroughly and candidly; they are very proud of their work and like to talk about it.

The engine itself is a little marvel. It's a four cylinder, V-configured, liquid-cooled, ported, 2-stroke-cycle, turbo-supercharged, direct-drive, diesel engine (whew, that's a lot of dashes!). Installed weight is comparable to a Lyc. IO-360 (targeted competition). Go to the web site for more info on size comparisons, but suffice it to say, the DeltaHawk is similar to a Lyc. in height (when installed inverted) but much narrower.

Unlike a "normal" 2-cycle engine, the crankcase isn't pressurized to provide intake air, so a standard internal combustion engine lubrication system using a sump and pump is employed; oil need not be mixed with the fuel to provide for lubrication. Without a pressurized crankcase, the initial air charge for start must come from elsewhere, in this case, a supercharger pressurizing an intake chamber (of sorts). Once the engine is started, exhaust pressure spins a turbocharger that takes over air supply duties.

Fuel is fed to the engine by an engine-driven supply pump that keeps a "head" of fuel available to the four mechanical injector pumps, one for each cylinder. The mechanical pumps are actuated directly off the crankshaft. These pumps maintain the high pressures needed (~20,000 psid) to directly inject fuel into the cylinders following the compression stroke of the piston. Since more fuel is pumped to each injector than

is actually used, return lines route excess fuel back to a small header tank that stays nice and warm in the cowling with the engine. This effectively eliminates any fuel icing issues.

Inject a little Jet A (or ordinary diesel fuel) into hot, compressed air and you get an immediate explosion! The force generated on each piston face is transferred to the crank via titanium connecting rods, and eventually produces approximately (Delta Hawk's measurements) 170 hp @ 2700 rpm on the preproduction engine. Doug estimates 210 hp (right with the IO-360) once an intercooler is installed, although 160 and 180 hp versions are also planned.

There are no valves (it's a ported engine), no camshaft and no electric ignition system. This reduces the parts count (greater reliability) and eliminates valve/ignition timing issues. Following each "explosion" in the cylinder, the piston uncovers the exhaust port (simply a "hole" near the bottom of the cylinder in an upright engine installation; it would be near the top of the cylinder in an inverted installation) allowing hot exhaust gasses to exit and provide pressure to spin the turbo. A little more piston movement uncovers the intake port allowing a fresh air charge to be pumped into the cylinder. A portion of the new air charge (forced into the cylinder under turbo pressure) "helps" to hurry along the remaining waste gasses already exiting the exhaust port. The turbo maintains enough pressure to provide 100% power up to 14,500 MSL (measured on a recent test flight in the Velocity). Additionally, if the turbo were to fail, the supercharger will maintain enough pressure to allow the engine to produce ~100 hp. Like a light twin suffering an engine failure, the remaining power will, at the very least, extend your glide.

Since it's a 2 stroke-cycle design, each piston cycle (up/down motion) is a power cycle. This means you'll actually have a smoother-running engine because the power is applied to the crankshaft throughout it's entire rotation cycle by one of the four cylinders. Each of a 4 cylinder, 4-cycle engine's pistons applies power to the crank every other rotation. That means you can have up to 70 degrees of crank rotation (read prop rotation since it's direct drive) at times without any power applied; the engine relies solely on prop inertia to get to the next power

stroke! That's why 6-cylinder engines are so much smoother, more cylinders means more power applied to the crank over more of each rotation.

The engine is cooled using conventional radiator and engine block/cylinder coolant jacket technology; no surprises there. The coolant is circulated with a pump spun by a serpentine belt--which also spins the supercharger. The engine has demonstrated a reduced-power operation capability (don't really have hard figures on how much "reduced") should a radiator/coolant pump malfunction result in cooling system failure.

They have cut back slightly on the test flight program to allow the engine on the test stand to build more hours; they want the test stand engine to stay ahead of the flight engine in hours. With typical candor, Doug explained their biggest concern for the test engine is ring wear. Ring wear is generally the most critical engine wear issue with ported 2-cycle designs. They plan a tear down after 50 hours of test stand time to assess ring wear and calculate some preliminary TBO numbers.

We spoke at length about many things including independent testing, production/production facilities and FAA certification. Some things I'm not at liberty to talk about (we signed a nondisclosure agreement to get the tour and see the engine's guts), but I can tell you that I was really surprised at Doug's enthusiasm over Delta Hawk's relationship with the FAA. Apparently the folks at the local FSDO are fairly enlightened as to their job prospects should General Aviation decline any farther; they're eager to "help" DeltaHawk as much as possible--miracles never cease!

As I said, Lisa and I were fairly excited about what we saw. Although we haven't chosen the design of aircraft we'll eventually build, we're convinced we'll be using a DeltaHawk to keep us aloft!

## **COMMENTS FROM THE CANARD LIST ON THE DELTA HAWK**

by John Rippengal

I think you have to keep in mind that the exhaust gas temperature with the diesel cycle is

very much lower than with a gasoline engine. You just don't have the horrendous problems of white hot turbines and associated lubrication problems with turbo diesels. Virtually all auto diesel engines are now turbo charged and the turbos last as long as the engines.

The two stroke variety (Wilksch and Deltahawk) HAVE to be turbocharged to get the air into the cylinders and the 4 stroke variety (Thielert) have a turbo on the normal auto engine which gives a more reasonable power / weight ratio.

Incidentally my taxi-driver friend here in Cyprus has just completed 1 million kilometres in his 300D turbo charged Mercedes without any service other than oil, water, and new tyres. That's 625,000 miles to save you the math. He sold it at 1 million Km, reckoning it didn't owe him anything. They usually drive at not much less than 100 mph.

### **GOOD DECISION, BAD DECISION**

(SAFETY doesn't require a 100% success rate. It just requires an acceptable alternative...)

### **THE MILKSTOOL**

by Paul Reinders

"Looks kinda short, but they said six-hundred feet," "I stepped it off. Four-seventy-five. Max!"

I had purchased the PA-22-135 at Peekskill Seaplane Base on the Hudson River on the condition that it be ready to fly and on wheels the next day. It was. However, the Hudson River formed a horseshoe at that point, the open end of the enclosed land to the north, and an 8-foot steel mesh fence bisecting the area from north to south. The Tn-Pacer was against that fence facing east towards the river in a field with 12-inch grass, the maximum length of the field being possibly 475-feet, and a light breeze from the west. West of the fence was a hangar, a Cub on floats, and the Hudson River again.

Long on optimism, short on patience, and having been told by the local pilots that, "We fly in and outta here all the time", I decided that my complete unfamiliarity with the PA-22, and lack

of small plane experience in the last 18 months, was the cause of my uneasiness. After all, this was Big Iron, with 135 horses and 4 seats, compared to my previous 90-horsepower, 2-place Cessna 140. And... I was going out empty... pilot and 10 gallons of fuel, max.

"Get 60 on the meter, pull full flaps, she'll come right out." "Okay. Into the wind it should make it. Give me a hand turning this thing around at the other end." Bad Decision #s 1 and 2:

I taxied east to the river and swung the plane around to face west 475 feet to the 8-foot fence and hangar. Shutting down the engine, my friend and two other "locals" helped me push the aircraft back until the wheels were within two feet of the embankment. We attracted a lot of attention from the residents of a trailer court on the right.

"Grab the struts, I'll run up to full power and let go of the brakes when she slips. You let go, too." Forward visibility was nil into the sun at 5 o'clock in the afternoon in October. At full power the tires began to slip on the grass. I let go of the brakes, my two helpers released their grip on the struts, and I was on my way. Bad Decision #3.

Unable to see outside, I began looking for the airspeed indicator on the unfamiliar panel. Part way through an unsuccessful search for the "meter", shadows from the fence and hangar distracted me. I looked up in time to realize they were VERY close. Time to go flying... with or without 60 on the meter!

I hauled on the flap handle and yoke, cleared the fence by several feet, rolled hard to the left to miss the hangar, and began to settle due to lack of knots on the meter. Missing the hangar by several feet, we disappeared from view over the embankment towards the river. Ground effect becoming more effective as we settled, the Milkstool reluctantly leveled off within inches of the water. No boats in sight. (The Hudson River is a beautiful place to see close up as the leaves change colors if you aren't preoccupied with other matters.)

A half mile up the river, still in ground effect, I released my death grip on the flap handle (still at

the full-flap position) and hammered the throttle in an unsuccessful effort to get more power. Another half mile and I was able to clean up and circle around to see the locals wandering back from the river where they had raced to recover pilot and plane after our disappearance. Looking down at that postage stamp from which we had just departed I vowed, "We ain't gonna do that again!" Good decision #1. (Late, but a good decision.)

On the ground my friend learned that no one had ever taken off from that field in anything except a Cub... always eastbound, and always with a headwind. No one had ever attempted to clear the fence.

The locals were giving odds of 2 to 1 that I would not make it.

"Why didn't you say something?" "I thought you knew what you were doing." "Why didn't you bet?" "I wasn't THAT sure!"

I learned something that day also. Attempting a maneuver to which there is no acceptable alternative to success is not smart. Good, safe pilots often fail to complete every maneuver attempted. However, failure does not result in catastrophe because a safe pilot always has an alternative that is acceptable. That is all that Safety requires... another "out" when success (or the destination) is not guaranteed. If in doubt, and without acceptable alternatives, FORGET IT!

Safety doesn't require a 100% success rate. It just requires an acceptable alternative.

## COOL FLYING

From: Larry Gaines

I figured I should tell this group about what the Bo and I did Tuesday and Wednesday this week. I pulled the back passenger windows and flew chase/photo for an incredibly fun "mission". A friend of mine flies a B-25 for its owner. He also owns a brand new, in the original box, Norden bombsight. He mounted the bombsight in the Mitchell (no small feat), we rounded up a war vet who claimed to be able to operate it, and we went bombing. Arrangements were made to use one of the Navy's bombing ranges at NAS

Fallon in the Nevada desert.

We arrived to a VIP welcome Tuesday afternoon, were assigned rooms in Bachelor Officer's Quarters, and knocked back a few beers with the C.O. of the base and the Base Operations Officer, along with about 30 F-16, F-18, F-5, & F-14 pilots in the Officer's Club.

At 0700 Base Ops. conducted a very serious briefing and discussion of the day's activities and the rules for use of the range. We had 6 bombs, Mark 15's filled with sand and water (instead of TNT). Our 77 year old bombardier hit the target with 2 and was close with the other 4. He said with resolute certainty that if we had another 6 he could put all of them near the center of the target. And he had not done this in over 50 years!

The B-25 on the bomb runs was about 10 knots faster than the best I could muster in my Bonanza, so I held in a high perch and dived alongside to catch up. I had to time it so we could level off where the video guy wanted me to be as he filmed each run. He says he got good tape of all 6 runs, so I'm feeling pretty good about my part in this.

On one run we tried to keep sight of the bomb all the way from 9000' to impact at 4000' MSL. It takes 18 seconds. I was already above max cruise in a very shallow dive when the bomb released. Before losing it under the wing I pointed the nose down and banked about 70 degrees. No dice. I was near Vne in a heartbeat. Literally. I now KNOW how quickly a high speed dive can develop in a slick airframe like a Bonanza. Don't do this. I am bringing a crisp new \$5 bill to Kittyhawk for Kevin. Maybe \$10 - that was double stupid.

The C.O. asked if he might get a ride in the bomber before we left. They did better than that. They gave him the right seat for the mission and let him fly the bomb runs. He enjoyed himself as much as we did. And the Operations Officer rode along, too. On several occasions I saw him pointing one of the (inop, thank God!) .50 calibers in the waist at me. During debrief someone asked about some "rat-a-tat" noises over the intercom in the bomber. Commander Jensen said, "Oh, that was me shooting down that V-tailed

bogey".

Upon RTB (return to base) Fallon Tower offered me the option and suggested the "Carrier Break". That's a 400' AGL level break around the tower to land. -- "Make sure to land past the arresting gear 700 feet from the threshold. Check wheels down."

**Way too much fun for a guy pushing 50.**

### **PRESIDENT'S CORNER**

I just want to pass a few quick things. We are planning the Annual Dinner in January. It will be on Saturday, the 24th, be sure to put it on

your calendar. We have scheduled a speaker that will give a program that you will not want to miss. Brian Shul, "the sled driver" was a SR-71 pilot, he is a great photographer and a phenomenal story teller. Brian has been the speaker at two past dinners, and has not failed in providing a unforgettable evening. The dinner will be at the Western Aerospace Museum at Oakland's north field and we are charging \$20 per person, don't miss this event.

On another note, it is chapter dues renewal time again. The annual dues are \$30, you can pay your dues when you pay for your dinner at the next meeting.

Ralph



EAA CHAPTER 663  
11700 Tesla Road  
Livermore, CA 94550  
JMeyerEZ@aol.com  
[www.eaa663.org](http://www.eaa663.org)