

The Lippisch Letter



Experimental Aircraft Association Chapter 33

November 2002

The Lippisch Letter is the monthly publication of the Dr. Alexander M. Lippisch Chapter (33) of the Experimental Aircraft Association, Cedar Rapids, Iowa.

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The Chamber

By Dave Leedom

No, it's not the latest John Grisham thriller. This chamber was much more intense. A few members of Chapter 33 took a "flight" in the Offutt AFB hypobaric chamber. Actually, the aerospace physiology training offered by the Civil Aero-medical Institute (CAMI) in conjunction with the US Air Force involved a lot more than just the altitude chamber flight, although it was the highlight.

The adventure started back in the summer when Ron White brought up the idea of going to Offutt for the training offered through the FAA's CAMI. A few of us were interested, so Ron set the wheels in motion. We were originally scheduled for training on September 18th but a lack of instructors pushed our date back a month to October 16th. The original plan was to fly out. Ron and Dave Koelzer were going to go in Ron's Long-EZ and Todd Millard, Tim Busch, and I were going to fly out in Todd's Skylane on the evening of the 15th. Mother Nature had different plans as poor weather was forecast for the 16th. Instead, we all piled into Todd's van and made the slow trek to Nebraska. Todd packed the van as if he were packing for his kids, which worked out well with this crew. We drove under clear skies knowing that tomorrow would show our good judgment.



The Hypobaric chamber at Offutt AFB photo by Todd Millard

Wednesday arrived and we were greeted with a cold rain. Good call on the van. We arrived bright and early at the Air Force base and then drove up and down Capehart road a few times looking for training facility. Someone noticed the gigantic hospital on our second pass and we pulled in. We ended up wandering around the hospital for a while looking for anything that looked like an information desk. The closest thing we found was a specimen collection window and nobody really wanted to stop there. Finally, an alert airman noticed us and took us out of the hospital to the aerospace physiology facility across the parking lot. She was a true hero.

In spite of our misadventures, we still ended up arriving with plenty of time to check in. The Air Force folks publish the class start time as 7:15, but plan on 7:30, just in case. The class consisted of the 5 of us and two other individuals, Chad, an aviation student from Nebraska, and Mark, a corporate pilot from Michigan.

The class started with some basic physics of the atmosphere. We covered the basic division, the zones, and some of the gas laws governing its behavior. Next, we covered some of the basic biology of respiration and circulation. With this background, we were finally able to start talking about the effects of altitude on the human body; namely hypoxia. Hypoxia is a general term that describes a state of oxygen deficiency in the blood. There are four types of hypoxia; hypoxic hypoxia, hypemic hypoxia, stagnant hypoxia, and histotoxic hypoxia. While I don't have the space in this article to cover all of these, I will tell you that altitude effects fall under the category of hypoxic hypoxia. We covered some of the hypoxia signs and symptoms and time of useful consciousness (TUC) at different altitudes. These are depicted in the two charts below. The only treatment for hypoxia is the obvious, oxygen. The amazing thing is the rapidity of recovery once oxygen is available.

Pressure Altitude	Time of Useful Consciousness
18,000	20 - 30 min
22,000	10 min
25,000	3 - 5 min
28,000	2.5 - 3 min
30,000	1 - 2 min
35,000	30 - 60 sec
40,000	15 - 20 sec
43,000	9 - 12 sec
50,000	9 - 12 sec

Signs	Symptoms
Rapid Breathing	Air Hunger
Cyanosis	Fatigue
Poor Coordination	Nausea
Lethargy	Headache
Poor Judgment	Dizziness
	Hot & Cold Flashes
	Tingling
	Visual Impairment
	Euphoria

We then covered some of the other dangers of high altitude such as hyperventilation, decompression sickness, and trapped gasses. We were given instruction on how to adjust for the expansion of this gasses at higher altitude. For example to relieve pressure in the middle ear we were taught how to hold our noses and blow with our mouths closed. They called this the "valsala maneuver". To relieve pressure in the intestinal tract we invent our own technique called the "pull my finger maneuver".

We switched gears to cover some of the other physiological considerations that can affect an aviator. These were grouped into mission-imposed stresses and self-imposed stresses. Mission-imposed stresses are those stressors that are a result of the flight and environment. Altitude, weather, and mechanical difficulties all fall under this classification. Self-imposed stresses are things that we do to ourselves that affect our ability to safely pilot an aircraft. The effects of alcohol, medication, tobacco, and sleep all fall under this category.

We also talked about the biology of spatial disorientation and vertigo, the causes, symptoms, and treatment. Add a quick lesson on vision and hearing and the factors that can help or hinder each and we were ready for lunch.

After lunch we covered the oxygen equipment that we would be using for the chamber flight and the chamber itself. Next, we checked out our equipment and practiced some of the techniques we would be using later. Finally, we had our pre-flight briefing and took our places in the chamber.

Our flight profile consisted of 30 minutes of pre-breathing 100% oxygen to reduce the risk of decompression sickness (a concern when flying above 18,000' pressure altitudes). An ear and sinus check took us to 6000' pressure altitude and then quickly back down to ground level. Next we climbed to 8000' and removed our oxygen masks. A rapid decompression was performed which took us to 18,000' in 10 seconds. The idea was to identify 2 – 3 symptoms of hypoxia and then recover. Having experienced hypoxia while flying before, I already had an idea of what symptoms I would exhibit. When I started to feel the tingling in my face and heat (I could feel my skin get hot, like a sunburn), I rapidly donned my mask. I was glad that I didn't experience the nausea that I had the last time.



Photo by Todd Millard

We climbed on up to FL 250 for our hypoxia demonstration. First, half of the class removed our masks and then set about answering some simple questions written on a card. The first question was to sign my name. I can do that. I could feel almost instantly the tingling sensation on my face. Much faster than at 18,000'. The heat was building, too. Some of the others mentioned how bright red my face became. That explains the heat, since all of the blood was rushing to my head to try to supply my brain with the much needed oxygen. I continued to answer some of the questions. *Figure out which numbers are out of order.* That seemed pretty to go well, but I had to go back and check to be sure. I looked across the chamber. Did they dim the lights, was it a little foggy in here? The people sitting across the chamber appeared to be farther away. Wait a minute; I know that is just my eyes playing tricks on me. Back to work on the questions. Now they want me to match some words with their opposite. *Tall – short. Small – large. Fat – ugly.* Wait. That's not an opposite, is it? I think it is. No, it's not. Fat goes with thin. That's kind of funny. That's hilarious! Why is that so funny? The instructor wants me to look up again. Still kind of fuzzy, lights are dim and colors seem a little dull. Huh? Oh yeah, the questions. *Circle the symptoms you are feeling.* What am I feeling? I don't know. It's kinda hard to concentrate on

that. Oooh. Now I am getting that old nauseous feeling. I don't want to get sick. What do I do? Oh yeah, put on the mask, no wait. I need to "gang load" the regulator first. There, now the O₂ is flowing. Now put the mask on. Got it. Wow. It's kinda hard to see. Seems pretty fuzzy. Breathe. Don't hyperventilate, just breathe. Wow. Feeling better already. Vision is coming back. I notice the others are coming back on oxygen now, too.

After the other half of the class went through the procedure, we descended down to 18,000'. Once again we removed our masks and the instructors dimmed the lights. Apparently they were at the brightness of a movie theater. It seemed pretty dark to me. We took out our cards and looked at the color pinwheel. I couldn't see anything. Pretty soon some of the guys started seeing the yellow. I started to see it, too. I really only saw the yellow and maybe that there was something else, but I couldn't tell you what the color was. Just different shades of darkness. Some of the others could identify the orange and green colors. I was only able to see the print (like 1-inch high letter Z's) in the yellow. I definitely didn't see the fine print at the center of the pinwheel. We were given the command to don our masks. I did that and continued to stare at the card. Suddenly I saw a flash of blue-green. It was like the spots you see when someone flashes a camera in your eyes in the dark. Just as quickly the big blue-green square cleared and morphed into the pinwheel card. I



I could see all of the colors and all of the print on the card. Amazing. It seems altitude really does affect your vision, especially your night vision. After that demonstration, we descended down to ground level with a few stops and even a climb to help one of the students equalize the pressure in his ears. Our descent was a "slow" 2500 fpm. Only in the Air Force is that a slow descent.

We performed our post-flight briefing and thanked our instructors. We turned in our class evaluations and then lit out for home. Tim decided to help Todd with the driving duties, but after an hour of Tim's driving we hadn't moved a foot. Todd decided he needed to take back over or we would never get home. Actually, we were stuck in traffic on the Omaha freeway and didn't move an inch for an entire hour! Todd had that contingency covered with a TV/VCR, the movie Pearl Harbor, and snacks. I told you he had packed to travel with us kids.

All in all, the experience was a great one. It was a fun and educational trip with a group of friends. A lot of the information is covered in a commercial pilot course but it still served as great refresher for me, and I am sure it was new information to some of the others. In addition, it is an excellent opportunity to experience the potentially fatal condition in a controlled environment so that you can recognize the situation before it's too late. Once you experience hypoxia, the symptoms you exhibit the first time, will likely be the same in subsequent exposures. That gives you the edge. While most of us don't fly in the flight levels, much of the training still applies in the single-engine recip. world. We all can experience spatial disorientation, vertigo and stressors. And even hypoxia. The first time I experienced hypoxia, I was flying over the Rockies at 13,500' after a long day (read exhaustion). The FAA says I have 30 minutes at that altitude. That day I could only take 15-20. Had I known then what I know now, maybe I would have recognized what was happening to me before I became nearly ill. As already stated, the experience was great. I recommend taking the training before the Offutt facility closes next year!

That's a Big Engine

By Mark Navratil

This is to be the exclusive engine for the 777-200LR and -300ER. The fan diameter is even bigger than the current GE 777 engine at, I think, 128 inches instead of 122 inches. It is meant to grow to 115,000 lbs. thrust. For the first flight on Sept. 18, 2002, it used 95000 lbs at takeoff.



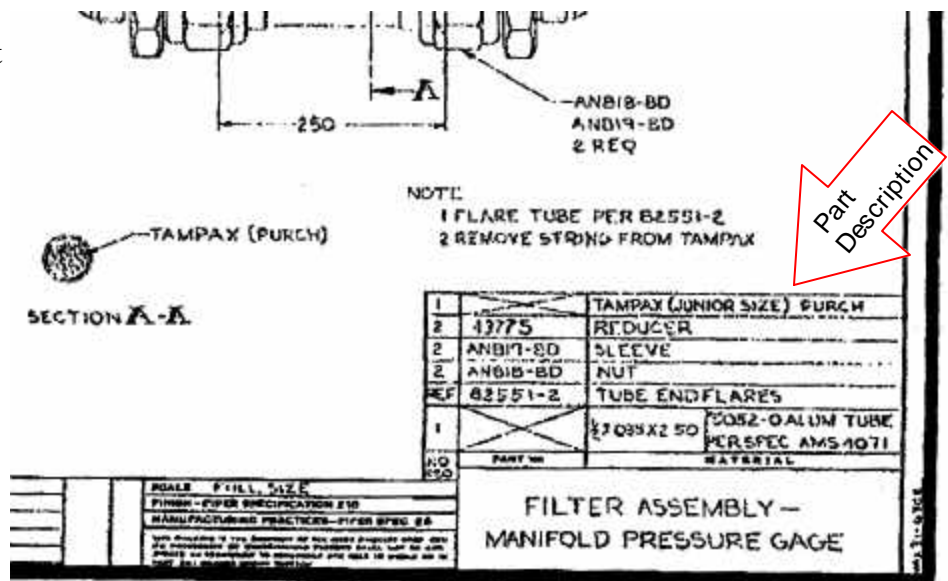
At altitude, the other three engines were throttled back and the 747 was flown at 335 knots using just the thrust generated by the GE90-115. Look at the ground clearance

This 747 is the flying test bed for the new 777-300ER GE90-115B engines.

Does Aircraft Spruce Carry this Part?

By Tim Busch

Recently, our flying club had the engine overhauled on our Piper PA28R200 Arrow. In the few months that followed, we had three failures of the manifold pressure gauge. Mechanics didn't seem to know what to do about the problem, but Mike Rieff, our Arrow maintenance officer took it upon himself to call Piper and get to the bottom of the situation. He found that Piper designed a fitting with a small loop near the engine attached to the manifold pressure sensor. At the bottom of that loop, there was a calibrated "leak" hole to drain moisture before it reached the instrument. The expert at Piper thought that the loop fitting might be damaged. However, he also suggested that we might do a field install of a filter, which was often used in the Piper twins, to perform the same function as the loop fitting. Take a close look at the official Piper drawing and parts call out for the filter.



There is no mention of a maximum life for the filter element, so we're wondering about the possibility of toxic shock syndrome in airplanes using the filter element!

Minnesota Dave and the Case of the Cracked Oil Filter

By David Koelzer

It was a dark and stormy night over the reeking slums of east London. The kind of night where your family has forgotten about you and your new best friends are named Smith & Wesson. Which is all fairly irrelevant because I was in a completely different time zone and I'm from Iowa not Minnesota but I was on my way to Minneapolis to visit some of the Sonex builders there. (Just forget I even brought all that up.)

I had a good day showing off my Sonex, giving a few rides and impressing everyone with the smooth quiet power of my Jabiru 3300. On the way home though I ran into some trouble. I was still 50 miles from CID when I began to smell something that smelt like something burning. Even though, my engine instruments were reporting everything with in normal limits, I decide to stop and check it out. I punched the "NRST" button on my Garmin GPS and found Independence, IA was just five miles away. When I landed and got out, I found to my surprise and dread the bottom of the cowl and the belly of the plane covered with oil. Sharp guy that I am, I knew that this was not a good thing. I pulled off the cowl and found the inside of the left cowl covered with oil right up to the area around the oil filter. However since oil was covering everything I could not pinpoint the location of the leak. I wiped off the filter, sandwich plate and cooler hoses to see if I could find where the oil was coming from but without the engine running no more oil was leaking out. It was getting late so I arranged to have a friend come and pick me up. The FBO manager was kind enough to put my plane in the hangar that night.

I drove back the next day with all my tools, a new filter, 4 qts. of oil and new hoses. When I got there we instantly became suspicious of the oil filter since oil had oozed out where I had cleaned it the night before. The filter was a racing style automotive type which has a hex cap spot welded to the end of the filter so you can take off the filter with a regular wrench and has holes so it can be safety wired. Oil was oozing from under this cap. I cut the safety wire and removed the filter. The FBO manager helped me cut the filter open to inspect the element and check for cracks. Thankfully, we did not find any metal chips in the filter but we did find several cracks along the spot welds. I was some what relieved and hopeful we had found the problem. To be on the safe side though, I installed a new Fram 4967 filter. I have been using Fram filters for ever in my cars and never have had one leak or spin off by itself. I don't mean to cast suspicion on the brand of filters I was using but I just could not convince myself to put on another one. I would have always been wondering if it would crack on me again. The Fram filter has no holes to secure a safety wire but Ron White showed me how to secure a hose clamp around the filter and then safety wire the hose clamp to the engine block to ensure the filter will not vibrate loose.



Photo by David Koelzer

I also did a complete oil change. I was able to drain about 1.5 quarts of oil from the sump. Neither the oil pressure light nor the oil temp light ever came on as I was landing so I hope the engine was not damaged. But I am glad I landed when I did or I would have had a very expensive paper weight hanging on the

front of my plane. I also spent a lot of time cleaning the old oil from the engine compartment and from the plane's belly. Not fun. W100 sticks to everything. I guess that is why it is such popular stuff to use inside engines.

The next day I ran up the engine and checked for leaks. I did find some oil drips but I expect that it was just old oil which vibrated out from where I could not get at it to clean it off. It certainly was not the spray of oil that coated the inside of my cowl. I cleaned it and did a run up again. This time a little less oil dripped out. I expect I will be cleaning oil for a long time. 2 quarts of W100 go a long way.

Once I was satisfied that the engine was working properly and was not going to dump its oil again, I installed the cowl and took it up for a spin. I climbed up staying close to the airport just incase and watched the oil pressure and oil temps like a hawk. I circled for 30 minutes and when I was confident that things were working right I landed. Now all I had to do was get my plane back to Cedar Rapids.



I drove back home that afternoon and Tom Olsen volunteered to fly me up and act as my chase plane on the way home. As you may have surmised from me writing this, I and my Sonex made it home safely.

Lessons learned:

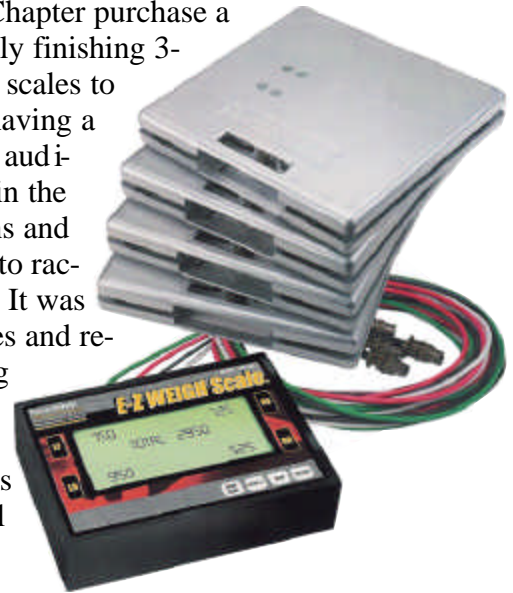
1. When in doubt, stop and check it out! It is always better to find yourself standing next to your plane at an airport that to find yourself lying at the bottom of a smoking crater.
2. Expect the unexpected. I'm partially using this one for it's Zen value but also to point out that just because you have never heard of a problem does not mean that it cannot happen. I certainly had never known an oil filter to crack before.
3. Trust your nose. If it doesn't smell right. It probably isn't.
4. Do a pre-flight inspection before EVERY flight. I guarantee finding a problem on the ground is far preferable to finding it in the air. Even though I had been flying trouble free all day, I should have done a more through preflight before I left Minneapolis. I might have found the problem sooner.
5. Aviation GPS's with a "nearest" function are the best things ever invented.
6. When you have an in-flight emergency be sure it is near Independence, Iowa. Jim and Karen Connell of Connell Aviation, Inc. were a huge help and I am very grateful that there are still a few full service FBOs at small town airports ready to help aviators in distress.

Last Meeting

Todd Millard

We had another great meeting in North Liberty on October 4th with about 30 members present. After our normal socializing time (and struggles with the video projector) we kicked the meeting off with a little Chapter business. The nominating committee presented their nominations for the Chapter offices up for election this year (see Elections article for more information).

The next order of business was a proposal by Steve Ciha that the Chapter purchase a set of digital scales for weighing aircraft. As the chapter is currently finishing 3-5 aircraft a year and it is always a tremendous hassle trying to find scales to weigh the planes, Steve felt the Chapter would greatly benefit by having a set of scales that members could use. From a show of hands in the audience there are actually 6 or 7 aircraft that will need to be weighed in the next few months! Steve had already researched a variety of options and found while true aircraft scales cost over \$4,000, a set of digital auto racing scales that would fit the bill perfectly only costs about \$1,100. It was suggested that one person be the scale master in charge of the scales and responsible for developing the procedures for checking out and using the scales. It was agreed that the Chapter VP (Alan Kritzman) would take on these duties. There was also some discussion on whether persons outside the Chapter could use the scales and it was decided that only Chapter members could use the scales. The final vote was unanimous to purchase the scales Steve recommended.



(The scales were received by late the next week and Alan has already tested them doing the W&B on his RV-8 that is rapidly approaching its first flight. He will have a demonstration of the scales at the next Chapter meeting. The Chapter also needs to build some boxes to transport and protect the scales and display, each pad weighs close to 25 lbs. If you are interested in helping, please contact Todd or Alan.)



Photo by Todd Millard

Following the Chapter business and a cookie break, John Dane started off the evening's program with a video of his flight in the B-17 Aluminum Overcast during its first visit in 1996. Several other Chapter members were with John on this flight and the video did a great job of showing the beauty and power of that old bomber. Next on the program was Ron White sharing some tales from the Emergency Repair Tent at Oshkosh. It is amazing how ill prepared some people and/or their planes are considering they are flying into the hornet's nest that Oshkosh is during that time. Finally John Ruyle presented a video tape from Dassault Falcon on high altitude, high mach flight. Despite a definite marketing message for the Falcon, there was a lot of very interesting information on the dangers associated with flying high and fast. During the discussion after the video, John told us that if there is a rapid decompression while flying over 40,000 ft, the pilots only have a few seconds to get their oxygen masks on before they are incapacitated. Wow. As I said at the beginning, it was a great meeting.

Next Meeting RV-7A

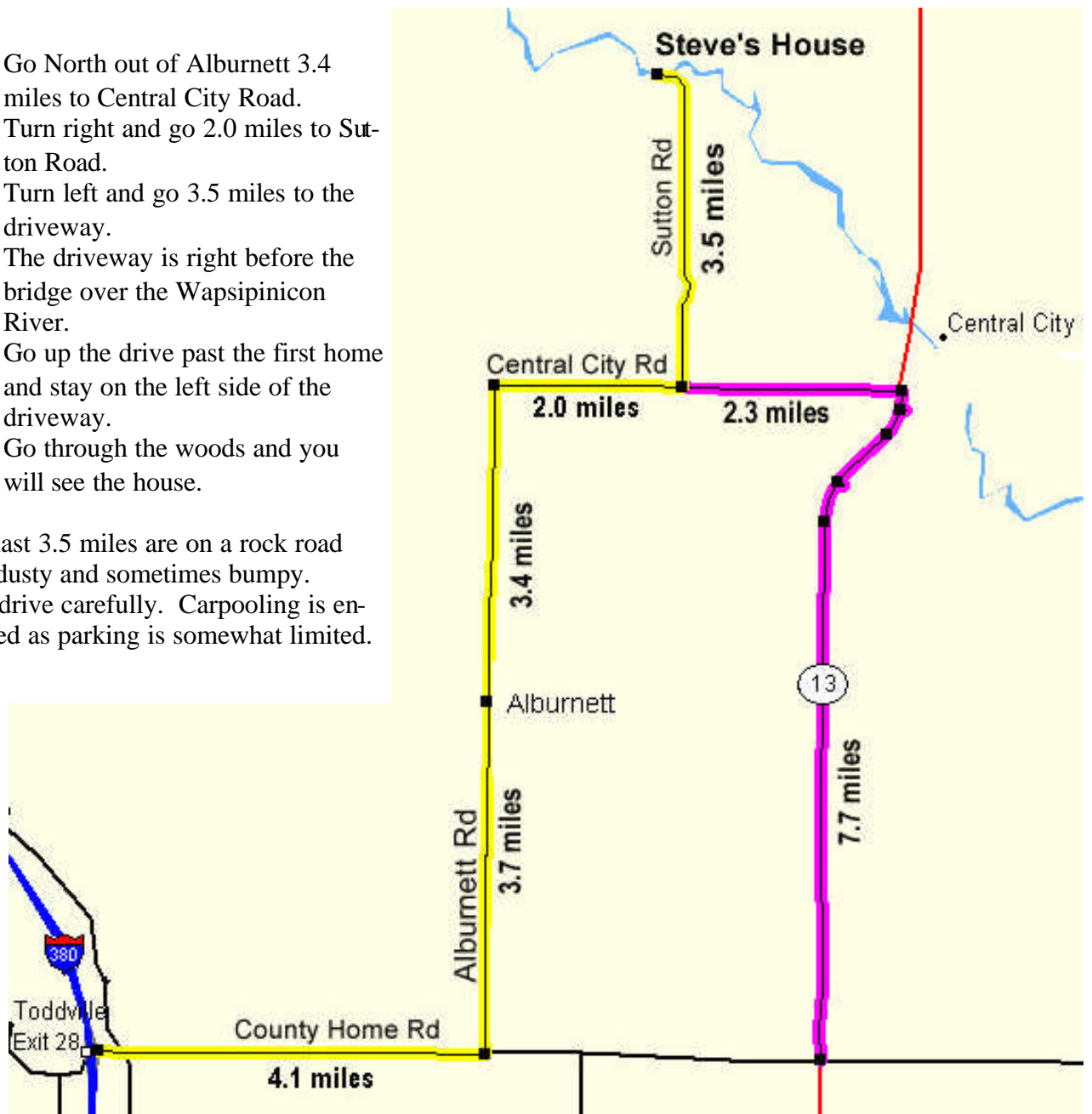
By Steve Ciha & Todd Millard

Our next meeting will be at Steve Ciha's home on Friday night, Nov. 1st. The meeting will start at 7:00 with the usual socializing and a program starting at 7:30. As usual, we'll start chapter business (see Election article). Next, Alan Kritzman will show us all how to use the new scales the chapter recently purchased (see Last Meeting article). Finally for the main event, Steve will present his RV-7A project and other related items. It should be another great meeting!

Steve lives at 5290 Sutton Rd (N42 14.644 W91 35.000), which is in the country near Central City. As the county is doing some road work on Paris Road, the best way to get there is this:

- Go North out of Alburnett 3.4 miles to Central City Road.
- Turn right and go 2.0 miles to Sutton Road.
- Turn left and go 3.5 miles to the driveway.
- The driveway is right before the bridge over the Wapsipinicon River.
- Go up the drive past the first home and stay on the left side of the driveway.
- Go through the woods and you will see the house.

These last 3.5 miles are on a rock road that is dusty and sometimes bumpy. Please drive carefully. Carpooling is encouraged as parking is somewhat limited.



Chapter Elections

By Todd Millard

At the October Chapter meeting the Nominating Committee (Steve Redman, Jack Rezabek, and Keith Williams) presented their nominations for the Chapter offices up for election in November. The nominations are:

Treasurer: Steve Ciha and Larry Wood

Secretary/Newsletter Editor: David Koelzer

Board Members (3 spots): Tom Olson, John Sapp, and Terry Scherman

The election will be held at the Chapter meeting on November 1st at Steve Ciha's house. There will be a final opportunity for nominations from the floor at that time. If you will be unable to attend the meeting, but would like to cast your vote, you may email me at todd@planetdiscover.com or call at 393-2284.

Campaign Speech

By Steve Chha

As you may know, I have served as Chapter Treasurer for the last year. This year I have agreed to run for treasurer as has Larry Woods. Since we have a hotly contested race, I thought I would let you know where I stand on the issues.

I think it can be all summed up in one paragraph. I will protect social security. There will be free prescription drugs (including viagra to ensure that there will be *stiff* competition) for everyone over the age of 12. I will protect everyone's pension, and if you don't have one I will guarantee that you will get one. Larry, on the other hand will raid your pension, swindle away your social security, and thinks just people living in Hiawatha should get prescription drugs for free.

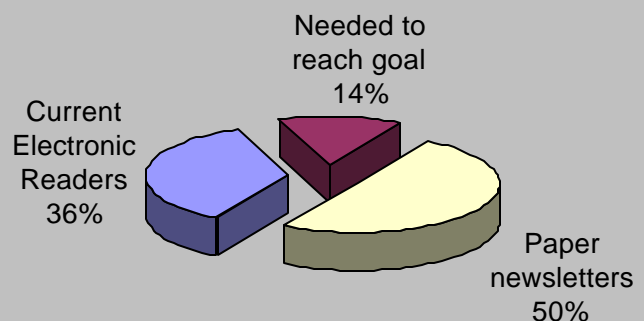
Obviously, everything in the paragraph above was pure baloney. It was my pleasure to serve the Chapter this year. It is my feeling that this Chapter will benefit from some new faces in leadership. Larry has been to most of the meetings this past year and has volunteered to help on most of the Chapter projects. He has shown that he is interested in what Chapter 33 is doing. I know he will make a good treasurer and it is my hope that you will vote for him, if he so desires to serve.

Chapter Christmas Party

By Todd Millard

An early reminder that the annual Chapter Christmas Party will be on Friday, December 6th at 6:30pm. This year we will be returning to the Royal Fork Restaurant in Cedar Rapids. Once again there will be an optional gift exchange (around \$10 value). My favorite moment last year was Steve Ciha opening one of the fake decorative presents Bishop's had under their tree. Don't miss out on the fun! Start lining up your babysitter (for those of us with kids) and searching for that unique and special gift (good or gag).

Help Us Reach Our Goal of 50%
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To join, send an email to
eaachapter33-subscribe@yahoo.com



Editor's Rant

By David Koelzer

If you have recently flown on a commercial airliner then you have noticed a few changes in the quality of service since a year or so ago. I don't fly commercial very much but up until recently I has always thought of flying in the big jets as a real treat. However, my latest commercial flight to Seattle was more trick than treat.

I arrived at CID early so I would have plenty of time to get through security. This turned out to be a wise precaution. The line at the metal detector was longer than I have ever seen at this airport. I figured that the crack staff of security experts were carefully sifting the passengers and their luggage to weed out the terrorists. However, as I got closer I realized the line was moving slowly because they were only running one metal detector and only three of the twelve security guards seemed to be doing any thing at all. The rest, it seems, were there to keep the carpet from rising up and floating away on it own.

Or maybe this distracted, slacker façade was just part of an intricate plan to lure the terrorists into a false sense of security by just *pretending* to be a bunch of inattentive, unconcerned, clueless and otherwise unemployable drop-outs from burger flipping school. Then when the over confident terrorists are tricked into giving the wrong answers to those seemingly simple but diabolically intricate questions: "Has anyone given you a package to carry on board the plane?" and "Have your bags been out of your sight since you packed them?" This undercover team can spring into action, dropping their slack jawed, head scratching disguises and quickly apprehend the would be high-jacker(s).

Yea, that's probably it.

Fly Market

FOR SALE Mustang II project, 99% complete. Everything you need to finish up the last details is there except for the paint. She has an O-360-A1F6 180hp Lycomming. The engine was built up by AeroSport Power and is zero timed with new cylinders, new crank, new alternator, new starter, new vacuum pump and new Slick mags. The crank is counter balanced for the rebuilt Hartzel constant speed prop. The prop governor is also rebuilt. This engine is still pickled and has never been run since shipment from the factory. Instruments are IFR capable with AH, AI, VSI, DG, ALT, and electric T&B. Also has a 3" G-meter. Radios are Terra by Tremble. Two coms, one Nav with LOC/GS, and transponder. A second VOR is provided by a stand alone NAV 121 unit. ADF also. I have the marker beacon and control unit up there on the top of the stack. At the bottom of the stack is an AM/FM stereo CD player specially designed for aircraft use. The intercom system is wired so that music is automatically muted with radio transmissions or receptions. Engine instrumentation is via Rocky Mountain MicroMonitor with all of the sensors. 45 gal fuel capacity via for aux tanks and a 25 gal header tank. Dual redundant fuel transfer pumps. Three axis electric trim system. ELT. Cessena 150 seats. If you want to see some pictures of the bird, go to the following web site. <http://www.experimentalairplane.com/oprojects.html> I have over 2700 hours in this project with a complete builder's log and pictures. Everything you need to finish is there. One good month of work and someone could have a real nice airplane. Registration N number is N144TM.

I was asking \$80,000 for the project which is just what I have invested. I've dropped the price to \$69,900 tomeeker@rockwellcollins.com or meekest@inav.net or (319) 295-6696 (day) or (319) 294-1754 (evenings/weekends). Thanks Tom Meeker N144TM

FOR SALE: Yaesu Aviator Heavy duty air band transceiver VXA-100 radio. Randy purchased this unit new at Oshkosh in July'99. He never was able to use it in flight, only played around with it at home. The purchase price was \$357.00. It also has the battery pack for recharging. asking \$280.00 for it. Please call Bernadette Hudson 377-7464

WANTED: Continental O-200 engine—firewall forward..
John Moffit 563-432-7711

FOR SALE: Senior Aero Sport PJ-260 aerobatic biplane project for sale. Call Mike Townsley 430 B Ave, Walford, IA 52351 319-846-2724 or email miket@southslope.net for info. Asking \$4250.00



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In The November 2002 Issue...

Hypobaric Chamber, 777 Engine, Piper Part, The Case of the Cracked Filter

Chapter 33 Calendar

Nov 1 7pm, Chapter meeting, Elections & RV-7A project visit Steve Ciha's home

Nov 7 7pm Safety Seminar Mt. Pleasant, IA Municipal Airport

Nov 14 7pm Safety Seminar Denison, IA Municipal Airport

Dec 6 6:30pm. Christmas Party, Royal Fork Restaurant in Cedar Rapids

Dec 8 11am EAA Chapter 93 Chili Feed Fly-In Blackhawk Field, Cottage Grove WI (87Y).

World's Scariest Airplane Attacks!



Keep in touch with chapter members.
Join the Chapter 33 email group:
<http://groups.yahoo.com/group/eaachapter33/>