



The Lippisch Letter

November 2003

Experimental Aircraft Association Chapter 33

A monthly publication of the Dr. Alexander M. Lippisch Chapter of the Experimental Aircraft Association, Cedar Rapids, Iowa.

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RV-6A and RV-7A

By Steve Ciha

September 5, 2002 I watched my RV-6A as it became a small speck on the Eastern horizon. Moments before, I had just closed the deal that transferred ownership of my airplane that had taken me three and one-half years to build. Art and Gail, the new owners asked me if I knew what day it was. I had many negative thoughts at that moment, but I answered "no," whereupon he said that it was 5 years to the day since the FAA had issued me the airworthiness certificate for the plane. I frowned a little. I think it must have shown, because he said "don't worry, I will take good care of her." The speck was so small by now that no noise was heard anymore, just a disappearing dot as he turned the plane west to its new home near Colorado Springs. He called 4 hours later to report a safe landing.

I think that it was my restless nature that had prompted me a year earlier to start building the 7A. Recognizing that by Oshkosh of 2002 I would be to the place where I would have the large money items to buy, I started to advertise my airplane for sale. I put an ad in Trade-a-Plane and finished with the sentence, "see it at Oshkosh in the RV parking area." I had perhaps 8 or 10 calls before the big



Photo by David Koelzer

fly-in and showed the plane to a couple of people. They were interested, but wanted more avionics in it. Several said they would look for it at Oshkosh. I put together my sales kit. 100 copies of a data sheet, a "For Sale" sign to hang on the prop, along with a cell phone number and a big rock to weight down the sales flyers.

I think that it was on a Monday morning that Tom Olson and myself taxied out and departed in formation for Oshkosh. As we entered the arrival area at Ripon, we were immediately behind a very slow airplane, a Cub I think. Tom was in front and was routed to runway 36. I was glad they sent me to runway 27. We were parked away from the rest of the RV's since that lot was full. I thought to myself, "this is not a good start to selling this plane," but as it turned out, we were closer to the runway and much closer to the heavy foot traffic. Location, location, location as they say, and I was in a prime spot to sell. We tied down the airplanes, installed the sales kit, and set up the campgrounds.



Photo by David Koelzer

It was just the next morning that the cell phone rang, and I had a "live one" so to speak. We set up a meeting at the airplane at 12 noon. I answered all the questions that this lady and her friend had. They were savvy buyers, and new all about RV airplanes. They had been looking for several years and had not found what they wanted. Tire Kickers are always a problem when selling things that cost a lot of money, but from the conversations we had, it appeared that this lady was genuinely interested. I explained all the quirks of this particular airplane, covering the various service bulletin items and any other things that were perhaps not up to perfect. I wanted them to know exactly what they were buying. Since there were a few things that were not perfect I had priced the plane \$1000 cheaper for an "as is where is" price. If they wanted all bulletins complied with it would be another 1000 bucks. She was a student pilot and wanted me to give her a demo ride in the plane.

Now, flying in and out of Oshkosh is always exciting, sometimes more so than I would wish. Once, while flying in with Terry Scherman, a B-25 was cleared from the East to runway 36 left. At the same time we were cleared for runway 36 right while approaching from the West. We crossed under the old bomber by about a hundred feet. If we had had a pistol, we could have shot that

plane down. Anyway, flying into the show is a task that requires complete concentration and not undertaken casually, so when she asked for the ride I asked her if she was serious about buying the plane. Her reply was “serious as a heart attack.” After a retort like that there was nothing left to do but give her the ride. We taxied out, got in the departure sequence and flew to a small airport to the North. As traffic lightened up, I gave her the stick after cautioning her that we were flying 40 knots over maneuvering speed and don’t make any quick, full movement of the stick. I explained that some RV’s had been lost doing exactly that. She had good knowledge of maneuvering speed and flew the airplane quite well, holding altitude, straight and level and in turns also. I showed her the stall characteristics and then headed for the airport to do some landings, letting her make the approaches with me doing the final flares. She did quite well really. We headed South to Ripon to get back in the arrival sequence. As I briefly looked into her eye, I knew the plane was sold. We agreed to a time in September to close the deal, with me doing the related service bulletin items before then.

A week before they came to get their new airplane, the com radio quit working. This really made the transition training quite difficult. Art had flown Cassut’s for many years and between flying my plane and Tom’s plane, he caught on quite well. Enough so that he was comfortable with paying me and flying away, without a radio. Sad day, but wealthy day.

After one year and 10 months, the new airplane was completed and an FAA inspection was scheduled. Each inspector has his own set of standards, and looks for different things. The first thing that he did was slowly walk completely around the airplane. He then spent about an hour doing an inspection that concentrated on the engine more than anything else. I must be starting to have some of those “senior moments” or something because I had safety wired several things backwards. I know that the wire is to “pull” the fastener tighter but had still managed to get it wrong. We decided that I was safety wire dyslexic. Tom was there that day and he helped me change the wires on the spot. I was embarrassed. Nevertheless, he did give me my airworthiness certificate, and the next day it rained all day. Two weeks later, while home from my work in New York, I flew the plane for the first time. It climbed quickly to 4000 feet where I leveled it off and reflected on what had happened the last two years. Two children married, two grand children arrived, one root canal performed 3 times, a new job working out-of-state, an airplane sold, and an airplane built.

Now it is time to fly!



Photo by Todd Millard

Homebuilts & IFR

By Mike Robertson

Recently the issue has come up several times about Amateur-Built aircraft and their ability to fly under Instrument Flight Rules (IFR). There are some that say that Amateur-Built aircraft cannot be certified to fly IFR unless the instruments and equipment installed in them are TSOd (TSO means Technical Standard Order). There are some that say that there are NO requirements at all and that they can't be stopped from flying IFR. Then there are some in the middle that say that certain instruments and equipment must be TSOd. In fact these are all incorrect. The real truth is somewhere in the middle. Before going any further let me explain that this article is mostly for new aircraft. Aircraft that have already been issued an airworthiness certificate and operating limitations must follow the operating limitations, or apply to have the operating limitations amended.

Amateur-Built aircraft today are certificated under 14 CFR 21.191(g) and operated under 14 CFR 91 (FAR 91). The guidance that FAA Inspectors and Designated Airworthiness Representatives (DARs) reference to issue airworthiness certificates to ALL aircraft is FAA Order 8130.2. Section 7 of the Order covers the requirements for Experimental Amateur-Built aircraft and tells us about eligibility, aircraft inspection, issuance of the Airworthiness Certificate, and the issuance of Operating Limitations.

This Order does not specifically mention requirements for TSO equipment and instruments to be installed in Amateur-Built aircraft. The key to equipment requirements is found in the operating limitations, which are a part of the airworthiness certificate. 14 CFR 91.9(a) requires that pilots follow operating limitations. 14 CFR 91.319(c) and (e) both authorize the FAA to issue necessary limitations that are prescribed in the interest of safety. FAA Order 8130.2 paragraph 134, paragraph (a) states, Operating limitation must be designed to fit the specific situation encountered. The ASI may impose any additional limitations deemed necessary in the interest of safety. The ASI and/or designee must review each imposed operating limitation with the applicant to ensure that the operating limitations are understood by the applicant.

However, this does not mean that the ASI can require the use of TSOd equipment. The following operating limitations prescribe aircraft equipment requirements and may be imposed:

1. This aircraft is to be operated under VFR, day only or;
2. After completion of phase I flight testing, unless appropriately equipped for night and/or instrument flight in accordance with 91.205, this aircraft is to be operated VFR, day only and,
3. Aircraft instruments and equipment installed and used under 91.205 must be inspected and maintained in accordance with the requirements of part 91.

Any maintenance or inspection of this equipment must be recorded in the aircraft maintenance records.

To understand equipment requirements for IFR, we must ask two questions: What are the Part 91 requirements for the equipment? And, What equipment is prudent or safe?

So let's look at FAR 91 and see what we have. There are three rules that effect the operation of amateur-built aircraft that do mention TSO equipment. FAR 91.207 address emergency locator transmitters (ELT) and states that any new installations after June 21, 1995, may not use an ELT that meets the requirements of TSO-C91. FAR 91.215 addresses ATC transponders and altitude reporting equipment and their use. It states that the ATC transponder equipment installed must meet the performance and environmental requirements of any class of TSO-C47b (Mode A) or any class of TSO-C74b (Mode A with altitude reporting capabilities) as appropriate, or the appropriate class of TSO-C112 (Mode S). FAR 91.217 goes on to state

that the altimeters and digitizers in the altitude reporting equipment must meet the standards in TSO-C10b and TSO-C88, respectively, or were tested and calibrated and shown to meet the standard referenced therein. You will notice that in each of these rules that there is no wording that this equipment must, in fact, be TSOd. Each does say that they must, or must not; meet the requirements of their prospective TSO. Conceivably, you could build your own transponder, and if you are able to prove it meets the requirements of the appropriate TSO, you could use it.

You will also notice rules that use the word, approved. Section 91.205(a) states, or FAA approved equivalents. Paragraph (b) references an approved safety belt. Paragraph (c) requires approved position lights. Approved typically means something that is approved by the FAA through a Parts Manufacture Approval (PMA), a Technical Standard Order (TSO), in conjunction with a type certification procedure, or in any other manner approved by the Administrator (21.305). For amateur built aircraft, equipment installed on the aircraft at certification is considered FAA approved. It is expected that operating limitations will be issued as necessary to cover this equipment, in the interest of safety. Even though this equipment is considered approved, it still may not meet the standards of a TSO. Its up to the operator to ensure that the equipment meets all Part 91 requirements prior to operating the aircraft.

Even though 91.205(a) excludes amateur-built aircraft, we now know that per the operating limitations amateur built aircraft are required by to be appropriately equipped for night and/or instrument flight in accordance with 91.205 to operate under IFR, so lets take a look and see what we need. Paragraph (b) talks about those basic instruments required for day VFR flight. Paragraph (c) gives the requirements for VFR flight at night. In paragraph (1) it states that those instruments and equipment required for day VFR per paragraph (b) must be installed. Paragraph (c)(2) and (c)(3) talk about position lights and anticollision lights, and clearly stated that they must be approved. To be approved the lights must meet the requirements of FAR 23 at a minimum. Therefore, if they do not come with an approval from the FAA then you must be able to prove that they meet the requirements of

FAR 23. But you will notice that paragraph (c) doesn't say anything about a TSO. Paragraph (d) gives the requirements for IFR flight. It states that for IFR flight all the instruments in paragraph (b) are required, and if the IFR flight is to be at night then the requirements of paragraph (c) must also be met. Then the paragraph states that two-way radio communications system and navigational equipment appropriate to the ground facilities to be used, a gyroscopic rate-of-turn indicator, a slip-skid indicator, a sensitive altimeter adjustable for barometric pressure, a clock displaying hours, minutes, and seconds, a generator or alternator of adequate capacity, a gyroscopic pitch and bank indicator (artificial horizon), and a gyroscopic direction indicator (directional gyro or equivalent). Paragraph (e) of 91.205 is for flight above 24,000 feet and states that if you are using a VOR then you must also have approved distance measuring equipment (DME). Paragraphs (f), (g), and (h) talk about Cat II and Cat III and do not pertain to this article unless you plan on building a jet powered aircraft.

So, after thoroughly looking at FAR 91.205 we see that other than those items already discussed there is no mention about a TSO. We must remember that a TSO is a standard to which equipment is manufactured. This is where our second question comes in. As an instrument pilot flying IFR in an amateur built aircraft, what equipment is prudent and safe for you and your family to fly with? It is necessary that when evaluating your aircraft during certification, that the FAA or designee (DAR) inspect the aircraft and issue the necessary operating limitations in the interest of safety. Remember, all the equipment listed in 91.205 installed in a STANDARD category aircraft at the time of its certification, was evaluated by the FAA through a type certification process, a TSO process, or a parts manufacturing process (PMA). For an amateur built aircraft most of the equipment listed in Part 91.205 requires no adherence to any FAA standards.

In light of how much time has been spent building these aircraft, we all want to operate them safely for many years. And safety is the first concern when the aircraft are being inspected for issuance of an airworthiness certificate.

Last Meeting - The Tuesday Night Aircraft Factory

By Todd Millard

Those of you who braved the journey north to Mt. Auburn and were able to navigate using my less than excellent directions, were treated to a wonderful evening of hangar flying and seeing a couple of great aircraft projects. Thanks to Steve Hendryx for opening up his shop for our meeting and supplying a wonderful spread of food for the members. And thanks to both Steve and John Stiegelmeier for sharing their projects with us.

John shared his experiences attending the SportAir RV Workshop in Griffin, Georgia last year. He felt the 7 day workshop was an excellent introduction to working with metal construction and understanding the RV plans and manual. It was an intense 7 days, but John was able to get his empennages complete. This not only gave him a tremendous confidence boost, but a great head start on the project. With the workshop and his quickbuild RV-7A kit, John's project is coming together quickly.



Photo by David Koelzer

A number of years ago Steve and a few friends started getting together every Tuesday night to work on aircraft. This little group became known as the Tuesday Night Aircraft Factory and this past year moved into a nice shop in Mt. Auburn. Over the years they have rebuild several aircraft

including a Tri-Pacer and a Bonanza. Their current project is a Murphy Super Rebel (not the 2 seat Rebel as reported in the last newsletter). The Super Rebel is a 4 seat, high wing STOL plane that is just like the Murphy Moose, but with a Lycoming engine instead of the Russian M-14 radial. They bought the kit from a gentleman in Florida who had started the kit, but the group has gone back and started from the beginning.

Thanks again for a wonderful meeting!



Photo by David Koelzer

Next Meeting - Alpha Omega Aircrafters

By Alan Kritzman & Todd Millard

Randy Hartman has decided to leverage his experience building a Grand Champion Long-EZ into a business helping other complete their projects. His new business is called Alpha Omega Aircrafters. Randy graciously offered to host our November Chapter meeting and show off his new digs. The meeting will be held November 7th at 7:00 PM.

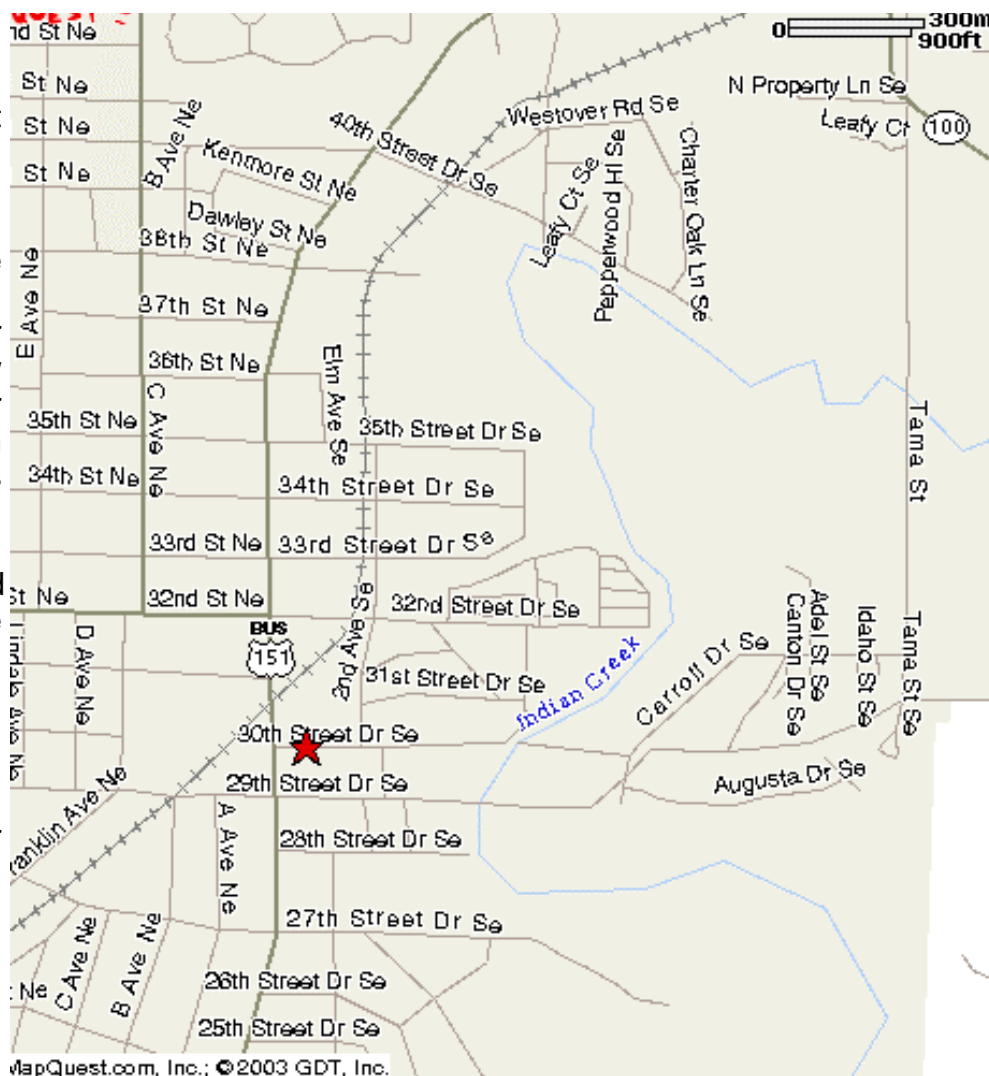
Currently in the shop, Randy has a Long-EZ and a Lancair IV-P. In addition, he is also working on a Lancair 360 at a customer's shop. Randy's shop is well equipped for working on airplanes, but is lacking seating for the group so BRING YOUR OWN CHAIR if you want to sit.

Alpha Omega Aircrafters
137 30th St. Dr. SE
Cedar Rapids, IA 52403

To get there, get on 1st Ave. in Cedar Rapids and go to 30th St. Dr. SE and turn East. There is a little car dealer on the corner called Autoland. Across 30th St. Dr. SE from Autoland is a little studio called Miracles Studio. Alpha Omega Aircrafters is on the right just past the Top Drawer furniture consignment shop and just before Aramark. Look for the signs and windsock, if Randy has time to get them up before the meeting.

In addition to visiting Randy's new business, we will be holding Chapter officer/board elections at our meeting. We have a new candidate on the slate for President, Tim Busch, with Alan Kritzman returning as our Vice President. For non-officer board members, Tom Olson, John Sapp, and Todd Millard are running for the three open slots. Nominations from the floor will be accepted at the meeting. If you are not able to attend and would like to cast your vote, please contact our Secretary David Koelzer.

Hope to see you all there.



Young Eagles

By John Anderson

Along with the Fly Iowa rally, many of our pilots have flown their own missions and have given a lot of kids happy faces. According to the Young Eagles office, our chapter has flown 314 aspiring pilots in 03. It seems to me we have done better than that but I haven't taken the time to count up all of the copies of submitted forms. At any rate, the EAA is very happy with our efforts to date and we should be to. This year, I surprised myself by marking my 100th. child flown and in my case, that is 100 takeoffs and landings. Wish I'd have taken a photo of each face as they departed the plane. A bonus to my YE flying this year was that two parents checked into taking flying lessons at one of the local FBO's and another is taking ground school.

We still have a couple of months left this year and surely there will be some nice weekends to take a few youngsters out while you exercising your machine. There is an organized opportunity on November 9th. at 9:00 A.M. at P.S. Air. We have some Cub Scouts and possibly some of their siblings lined up. If interested in flying that day, please let me know; phone number 399 5711. The den mother is a licensed pilot but hasn't had a chance to fly for a while. I suggested one of us could probably remedy that. Maybe we can convince her she should maintain the privilege she worked so hard to get.

Project Updates

Tail's done, right wing at 98%. Pieces are going to Monticello airport as they are completed. That's where the whole of N701LW will get put together and fly eventually. Hopefully, there will be a lot more progress after the weather turns nasty. I find that trying to set a schedule for completion is only and exercise in futility! - Larry Wood

My RV-7A is coming along slowly. I have the empennage and wings complete with the fuselage almost finished. I am currently assembling the upper forward fuselage. I will be attaching the tail pieces after this. Completion time is still too far off to estimate. - Tom Caruthers

My RV-9A project is moving slowly forward, most days. Some days I slip backward a tad. The tip up canopy is occupying my time this week. I have the canopy frame nearly done and today I cut the plastic bubble into its forward and rear halves. Trimming it to fit will be another story. The project should be done by December, but I don't know what year. - Armin Jacobs

Thought you guys might get a kick out of this...I had a scrap fuel tank rib from my airplane project that I let Skyler play with. He wanted me to paint "his airplane part" while I was painting my airplane's wings. So I did....and he likes it (carries it around with him everywhere). Kids are fun. - Mark Navratil



Photo by Mark Navratil

Editor's Rant

By David Koelzer

One hundred year ago two brothers succeeded at something that a lot of people had tried for a long time to do. The brothers were not part of a top secret, money no object project. They were not funded by a major corporation. They had not received a grant from the Tom C. & Kathleen T. Macarthur Foundation. Nor were they part of a Reality TV program. They were just a couple of guys who liked tinkering with things. Liked to try out ideas, refine the good ideas, toss out the bad ones. These guys thought outside of the box before there even was a box. These guys worked long hours in their garage and workshop making parts out of dreams and came up with the worlds first flying machine. Who do these guys remind you of? I don't know about you but I see dozens of guys just like Wilber and Orville at every chapter meeting.

Fly Market

FOR SALE: 1/4 Share of 1981 Piper Warrior II (PA28-161), hangered at Cedar Rapids airport, 2509 TT, 272 SMOH, IFR. Contact Tom at 895-6989 or 368-0232.

FOR SALE: One wood project and one metal project; Moving, so best offer by end of month. Tom Harris (319)362-6323 or tom-annee-harris@juno.com

FOR SALE: Zenair 701 project. Fuselage on gear. Motor is a Geometro with turbo and Ravin redrive on fuselage Call Bruce Wutzke 319-377-2010

FOR SALE: **Bendix/King KX99** hand-held transceiver, 720 com, 200 Nav and 7 weather channels \$250. **Flightcom headset** Night-hawk Model 4DLX \$60. **Strong Enterprises Parachute** Para-cushion Chair model 305 Covers the back of the body from the shoulders to just above the knees. Diameter of canopy 26'. Has been repacked only by Strong Enterprises. \$425 flown a total of 40 hours. Paul L Jones, 3430 Emerson Ave NE, Cedar Rapids, IA 52411, 319-393-6777





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In The November 2003 Issue...

RV-6A & RV-7A, Homebuilts & IFR, Project updates

Chapter 33 Calendar

Nov 7PM Meeting at Alpha Omega Aircrafters, 137 30th St. Dr. SE Cedar Rapids

Dec 6 Tom Rebholz Memorial Chili Fly-In Blackhawk Field (87Y) WI.

Dec 12 Iowa Aviation Promotion Group Board Meeting, Exec 1, Ankeny Airport, Ankeny, IA

Dec 17 100 Year Anniversary of Wright Brother's First Flight.

June 4-6 Fly Iowa 2004 Commemorating the 60th Anniversary of D-Day Attendees are encouraged to dress in 1940's style clothing or military uniforms. Washington, IA



Local Sonex builder and newsletter editor tries out for flight demonstration team. Still waiting for call back.