



EAA Chapter 21

NEWSLETTER

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May 2006

The Official Newsletter of
EAA Chapter 21
Evansville IN

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Saturday
May 13th — Chapter Meeting and Hanger Party
Skylane Airport

10:00 am until ???

Please park in front parking lot and walk back to North end of road.

It is a go. We have all of the official okey dokeys from the EAA 21 chapter officers, Skylane (3EV) pilots association, airport manager, wives, et all. Saturday May 13th from 10:00 until people decide to leave (since Skylane doesn't have lights that would be before dark). "Indiana Larry" Helming (2005 RV-7) and I, Steve Eberhart (2007 RV-7a), will be hosting an official hangar warming party, for our new RV digs, at our brand new Skylane hangar. Since this is bound to be second only to Dana Overall's RV Fly-in, (Dana will also be here), our local EAA chapter jumped in making this the official May meeting and sponsoring all of the FREE burgers and brats chapter members and RV fly-in crews can eat for lunch. Word has gone out to the Ohio Valley RVators and a number of them are planning on joining in on all the fun. Les has agreed to coordinate all ground operations, so all is ready and waiting for your arrival.

Come join us for a day of fun, eating and flying.

Steve Eberhart

RV-7a still a bunch of aluminum pieces but at least they have a hangar

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Shielding and Grounds

An electrical circuit requires two conductors; there is no such thing as "ground" or "earth", although I've heard they found the absolute reference ground at 0:00:00 Lat, 0:00:00 Long. If you throw "ground" out of your vocabulary and instead substitute "signal return", you'll have a much better time in wiring things, especially on dielectric (plastic), as well as metallic airplanes. Every morning when you arise, repeat ten times "There is no such thing as ground in electrical circuits". That being said, when a signal goes from a source to a load, there must be a way for that signal current to get back to the source. A shielded wire, or a twisted pair, is a perfect medium to do that, providing that the return is connected to common at the source end. If it is not connected at the source end, then the current must find its way back by some other path, often bringing with it other undesirable currents, giving rise to common-mode coupling, so-called ground-loops. These currents arise from the difference in potential, AC and DC, between the source common and the load common. Obviously if the load is tied to its common, the return conductor must be tied at the receiving end also! This is where opto isolator circuits find good use in keeping out unwanted signals; they only require being tied to the opto circuit at each end without a common return connection between them.

One of the best things you can do to minimize interference is to have a single point at which all power returns are connected. Keep the main and common buss close together and run twisted pair or shielded wires to each load. It also helps to have capacitors connected between the main and return buss. Parallel a 4700 uF 35V with a 1uF 35V film and a .01 ceramic disc across them. This keeps both the main and common buss at the same AC potential. Under no circumstance should loads share a return! Please don't "daisy-chain" returns from one circuit to another! Down that path lies destruction, Alice! On my Lancair, I have two terminal boards that are mounted horizontal and parallel, one below the other, with a copper return buss below the bottom terminal board. The return buss is made from flattened copper tubing with brass screws through it at the same spacing as the terminal board terminals. The upper terminal board is for the main, aux, and avionics buss. The one below it is for load distribution. I run twisted pair from the main and distribution terminals to each circuit breaker. Current flows from the main, to the circuit breaker, then back to the distribution terminal. That provides cancellation of the magnetic field in these conductors. Then each load has a twisted pair from the distribution terminal and the common. Here again, the currents go out and back over these wires causing the magnetic fields to cancel, and all circuits are tied together at one common point. An advantage of this scheme is that each load's source wiring is easily found on the distribution board for connecting, dis-connecting, and trouble shooting. Another thing you might try is to mount an LED with each circuit breaker and wire it directly across the breaker terminals with a series resistor, 1.2k 1/2W for 14V systems, and 2.7k, 1/2W for 28V systems. Then if a circuit breaker is open under a load, the LED will be on, showing that it's open.

Radio Shack and JameCo have snap-on ferrite interference suppressors that can be placed over coax and wire bundles to cut down on interference between circuits. They are tubular ferrites, about 3/4" OD, 1/4" ID, and 1" long, sliced in half down their long dimension, and secured in a hinged plastic cover that can be snapped in place over wiring. They cost less than \$2 each.

One more consideration is where to put the field circuit breaker if an alternator circuit breaker is used. If your battery is run down and you have to jumper it to start, and then shortly after you take off, the charging current on the depleted battery could be very high, tripping the alternator breaker. If your field breaker is connected to the main buss, the regulator will sense the low voltage on the buss and feed maximum current to the alternator field. With the alternator breaker tripped and no load, the alternator will put out well over 100V! Then when you push the tripped-breaker back on, the sudden inrush current and high voltage could fry your electronics. A better place to connect your field breaker is on the alternator-side of the alternator. That way, if the alternator breaker trips, the alternator field will still be connected to the alternator output and keep its voltage under regulation!

For a much better look at the subject of shielding and grounding, try "Interference Handbook" by W.R. Nelson, WA6FQG and "Grounding and Shielding Techniques in Instrumentation" by R. Morrison. Morrison has good illustrations of how interference currents get coupled in, electromagnetically, electrostatically, and common-mode! Nelson's book has interesting tales of the interference problems he analyzed and solved!

Minutes of EAA Chapter 21 meeting of members April 12, 2006 held at Skylane Airport. About 36 members and guests attended. President Keith Schlageter called the meeting to order at 7:00 sharp.

The Dayton trip was discussed. Four chapter members have reservations for the "Behind the Scenes" tour. This group of four -Rick Merriwether, Larry Helming, Steve Everhart, and Mike Zeller (who got in on Jerry Euler's original pass)- will arrive on Friday for the tour, will spend the evening in Dayton and visit the Hartzell plant on Saturday. All other chapter members are invited to attend all activities at the museum except for the Friday Behind the Scene tour which runs from noon (11 am Evansville time) to 3pm.

Share a (plane) ride is nearing readiness for continuing operations. A list of riders and pilots will be published when compiled. So far there are more pilots than riders.

Sun and Fun Speakers:

Eric and Kurt Lindenschmidt rented the new Henderson Diamond airplane and over the next three days made it to Cocoa Beach, and Lakeland and stopped at Huntsville, AL on return. Plane flies at 141 kts; cost was \$250 min. per day and/or \$125 per hour wet (includes cost of gas). Phil Dawes flew the Navion and spent \$462 on fuel with 3 people onboard. Took them 4.5 hours for trip down and back in 5.5 hrs non-stop. Claims he flies faster than Keith's RV8. Winds made a difference -*And*-The Navion came back with more GPSs on board than they went down with. Earl Schroeder made a visit to plant city and came home more safely using a new traffic avoidance system. It worked and he made it. He reported he never realized there were so many planes around that he never knew about. Jim Schmidt made it down and back on two 11 gallon cans of auto gas using his two cycle Pulsar. What mileage -- that even beats the Navion flyer with three GPSs. Jim mostly talked about the daily routine of eating out at all the various places. That figures, and Jim is a slim Jim Pretzel type. Wayne Ray worked at SNF again this last year. This is his 7th year of working there. Ground Safety was his topic. He saw one incident where a T6 ran into the back of a gate. Handlers were telling him to turn one way and he ignored their instructions. I guess he will know better next year. There is lots of dry grass, sand and dust at SNF. Watch were you park that you are not victim of a spreading fire if one starts up. Avoid any high weeds or piles/clumps of cut grass. Mike Zeller flew down in Henry Bigge's Cessna 172. A problem developed with one magneto and Mike made repairs at Panama City. He apparently shared sleeping quarters with Keith and Earl and needed a new ANR headset to get to sleep every night. Something about a sound of the Delta Hawk diesel exhaust growl. They at SNF lower the minimum for VFR flight there because of the visibility problems. Everyone had a great time, some sun burns and lost of pilot sharing times together.

The meeting was called to an end by Keith at 8:08.

Larry Helming, secretary

Chapter 21 Monthly Balance Sheet
April 2006

March 25, 2006	Beginning Balance	\$2,926.64
	Receipts	
	Interest Feb	\$0.66
	Dues - 3X\$15 & 1X\$20	\$65.00
	Disbursements	
	Apr Newspaper print	-\$51.15
	Apr Office Rent	-\$10.00
	Stamps	-\$39.00
April 25, 2006	Ending Balance	\$2892.15

Notice: Dues are now past due.
Please send your dues to

Phillip L Dawes
10505 Hillside Rd.
Evansville, Indiana 47720

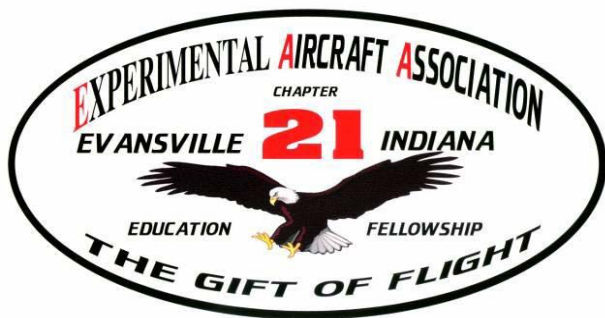
You can tell if your dues are due by looking at the label and seeing the four digit number. It should be 2006 or higher.

Unfortunately we will have to discontinue your newsletter if not received by Mar. 20, 2006.

EAA Chapter 21

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Address Service Requested



Upcoming Chapter 21 Events

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