

EAA 983



Flight Planning

(Or how in the world do I get there?)

If you're like me you probably learned to flight plan by sitting at the kitchen table with maps, pen or pencil and a log that was home made on which you could enter waypoints, times and fuel burns. SxT=D. That's all you needed to chart out your course and develop your flight log. You flew with a watch to time your legs and THEN figured out if your wind predictions were accurate with your E6B. If



you could find your E6B today, I doubt

that you would remember how to use it without some review. I would venture to guess that anyone under 30 has no idea that there was a flight computer that never needed batteries (see photo on left)! I remember

having a pad of tear-off flight logs that

I could pencil in my flight plan and although you might be able to still find them, why would you not let some silicon chip figure it out for you?

Today you would be considered a Troglodyte if you weren't using one of the online Flight Planners, many of which are free, to plan your trip. In this article I will review several of the online Flight Planners that I have used in the past. Now, I'm cheaper than a Scotsman shopping at Costco so I'll start with the free ones first and work towards the big money ones.

AOPA is a good place to start. If you are a member then you have access to their planning section. There you can simply enter your departure and destination and the program lays down a track to your destination with weather overlaid in pretty colors, including winds! You can then select NAV LOG from the top menu and it will create a

nice formatted log with more information than you need, which you can print off for carrying in flight. You can even get a pictorial of those ever changing TFR's after you sign a disclaimer, because even the FED has no idea where Obama will be golfing next or Michelle will be shopping (on your dollar). FMI: <http://www.aopa.org/flightplanning/>

Another very popular free Flight planner is www.fitplan.com. With this planner you will have to weigh through a few advertisements but it will provide you with a flight log with Winds aloft, Lat/Lons, fuel remaining, ETE and a frequency for Flight Watch weather. The program offers you various altitudes and then informs you of the duration of your trip based on the altitude you suggest. You can overlay your trip on either a VFR or IFR map as well as weather radar. You can select Imagery which gives you a very attractive "Google Earth" like view from outer space. A few frequencies for your departure and destination are included as well as a telephone number for clearance delivery which may not always be handy while waiting at the end of the runway. FMI: www.fitplan.com

Of course both DUATS and DUAT are free as they are paid for from your tax dollars and although not run by the US government they are funded by the government. Many of the free flight planners use DUATS/DUAT for filing your flight plan so you will probably need an account with either or both. These flight planner have gotten better over the years and provide you with all the bells and whistles to get the job done. You can investigate what's available at www.duats.com and www.duat.com (notice one is plural but they are different and competing services). Both have a smart phone app but I find any smart phone app too small a

size for my eyesight. Duat has teamed with Seattle Avionics with a program called Voyager. I have used this program in the past and it was very powerful but it can only be used (last I checked) on a PC and I use a Mac. Check it out here <http://www.seattleavionics.com/DUATVoyager.aspx>

You can't go wrong with any of those free flight planners and all are better than pen and paper but there are some really great flight planners for just a couple of bucks.

Be aware that the following FP'ers work on the iPad and I can't verify that they will work for, say a Samsung Galaxy, as I am an Apple guy and have not used a PC in 10 years! If you have Foreflight, WingX, Garmin Pilot, AOPA's FlyQ (which has a very neat app for the iPhone called FlyQ Pocket for airport information at your current location, automatically determined by the phone's GPS), or Jeppesen's Mobile flight planner then you really need nothing else. Foreflight, which I am most familiar, has very few limitations but it does have a few things that lead me to supplement with a few other flight planners. The first one I use is Airnav. www.airnav.com

Airnav is not a Flight planner per se, but it does allow you to find out everything about the airports you are going to. It will give you the current weather and TAF's at your destination including the facilities that you might use when you arrive like, fuel, maintenance and crew cars. You can do a basic flight plan where you select the stops along the way based on the price of fuel. This is where I always start by plotting my route and making small variations based on the price of fuel along the way. Once I have an idea of the cheapest route (based on

the fuel cost. Use the Aviation Fuel tab and then select "Plan a Flight With Fuel Stops), I plan my route. Once you do that, call to confirm the posted price. I once went about 45 minutes out of my way for cheaper fuel only to find out it wasn't the price that was posted. You'll only do this once before you learn.

Once I do my homework on Airnav I continue to my favorite Flight Planner, WWW.Weathermeister.com

This is a fee based service, about \$70 a year but is by far the best I have found. You can customize this Flight planner with the airplane(s) you fly. How many planes you can save depends on your level of service, (cost). Once loaded with your airplane's specification you simply load your departure and destination, make a few assumptions and BANG, what is displayed on your computer is your flight plan, winds, preferred altitudes for Economy and Speed, weather, charts, Notams, TFR, and much more in a logical format. But the best part is that this information is in color! Why is that valuable? When you look at all the Notams that pertain to your flight it can be mind boggling. With Weathermeister you simply look for the ones in **RED** which are the ones that matter to your flight and ignore the rest. When looking at winds the **Green** ones are tailwinds and the **RED** head winds. Makes sense doesn't it? The beauty of this is you can scan your flight plan in a matter of seconds not minutes or hours.

Obviously there are many more available that are beyond the scope of this simple review. If you are happy with the one you use, by all means stay with it, but it might be worth a look to investigate the ones mentioned in this article. If you prefer to stick with a pencil and paper and that works in

your Curtis Wright pusher, Don't worry, Be HAPPY!

Program Reminder

Feb 9

Caravellair Roadable Aircraft

Pecan Plantation Airport

Mar 9

Click-Bond Aircraft

Pecan Plantation Airport

Apr 6 (Due to SnF)

Aero-J.E.D.s

Pecan Plantation Airport

Apr 9-14

Sun-n-Fun

Lakeland, FL ([KLAL](#))

May 11

Grand Rapids Avionics

Pecan Plantation Airport

Jun 8

Paul Dye (Kitplanes Magazine)

Pecan Plantation Airport

Jul 13

Emergency Response International (ERI)

Pecan Plantation Airport

Jul 29 - Aug 4

EAA Airventure

Oshkosh, WI ([KOSH](#))

Sept 21

EAA983 Fly-In

Dec Christmas Party TBA

Pecan Plantation Clubhouse

WHO 'DAT?

In other words, who's that guy/gal you're sitting next to at the EAA meeting?

We sit next to them, laugh with/at them and share stories. Ever wonder what their background is?

This month I would like to start a new segment called "Who 'DAT". Each newsletter I will attempt to highlight one of our members by telling you, sometimes in their own words, where they came from, how they got into aviation, what brought them to our little EAA chapter and more importantly, what can they do for you, the member who is needing guidance of some kind. NOTE: I will be asking some of you to participate in this quest by allowing me to interview you or providing a short written history of yourself (less than 10,000 words for our more loquacious members). Expect it to be edited, enhanced, or downplayed to be entertaining to our members. Any resemblance to reality is only coincidental. CAUTION: Don't make me come out there and drag this stuff out of you. I know we have a few humble aviators who would rather hear about someone else but in the slim chance you all clam up I will have to write something about myself and that is a punishment you don't want to endure. OK, enough water boarding of the audience. Let's get on with the Show!

This newsletter, I spoke with Don McDonald and his wife Kim.

Lets say your child broke his leg playing soccer and though you had adequate health insurance you always fancied yourself an artisan with wood. Your spouse complimented you when you repaired the leg on the coffee table with toothpicks, duct tape and Gorilla glue so you figured you could set your child's leg yourself. How difficult could

it be? Give the kid a shot of Vodka to numb the pain and a piece of Chocolate cake to divert their attention and you go to work. What are the chances of it coming out all right? Let me say this, "ARE YOU INSANE???" This sums up Don and Kims introduction into aviation.

Don and Kim were sailing their catamaran in the Bahamas when a chance meeting with a couple of aviators doing some island hopping themselves, stoked Dons's interest in the possibility of hopping the Islands himself by air. Back home he paid a visit to an acquaintance who was manufacturing airplane parts. This friend was building an RV-10 and after helping him buck a few rivets Don decided he could do this himself. Did I mention Don wasn't a pilot at the time? (See setting your own child's broken bone, mentioned earlier.)

With the help of a nearby fellow builder this project would go smoothly and so Don ordered his RV-10 and the first kit arrived on November 1, 2006. Though intimidated by all the pieces at first, directions were well written and his confidence level was high, so with the help of Kim they began building.

After nine months of progress the project looked like an airplane so Don figured it was time to start taking lessons. Don amassed 40 hours in 11 months, certainly not a blazing speed, but he found he was more interested in building. After many gaps and delays in

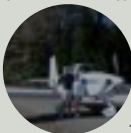
his flight training he was lucky to find RV flight training guru Alex DeDominics in Midlothian, Texas. With so many delays, and still no license, the first day with Alex had Don feeling like he had two left turns and discouraged he called Kim and told her, "sell the plane, you married an idiot!"

Thankfully the second lesson went much better and with Don's renewed confidence, he call Kim again to tell her Not to sell the plane.

During this time Kim had been researching Pecan Plantation and Don made a visit and spent time with Dave and Wendy Moore and with the help of Carol Chaipe toured the airport.

Learning to fly and building an airplane would tax any one of a younger age let alone someone in their late 50's but sometimes it's better to barge ahead and as Don says, "I wish I knew as much as I don't know."

The airplane was blessed by the FAA on March 2009. On May 15 Don pass his FAA check ride, almost two months after his plane was finished! June 9 was the maiden flight and all went well with Don at the controls. On flight number four, with 1.7 hours on the airplane, at 5500, about 5 miles from the airport the engine quit! For most of us this would be a harrowing experience but for Don, well just refer to the last sentence of the last paragraph. Remembering his freshly acquired flight training he "Flew the Plane" first and got to figuring out the problem. Starting on the left



Don McDonald (cont)

side of the panel and working across, Don began to flip switches like a magician flips a coin on his fingers. Don had dual electronic ignitions, controlled by two, three way switches. One position shut them off, the other ran them on the main battery and the third position on the standby battery. When he finally selected both ignitions to the Standby, the engine sprang back to life. He called and cancelled his emergency and landed to trouble shoot the problem. Being that it was his anniversary there was little troubleshooting that day. Later he confessed to Kim that he thought it was a loose wire, to which Kim replied "Just exactly how many loose wires are there?" The next day it was determined that the CB tripped because it should have been a 10 amp and not the 5 amp installed. The remaining time was flown off without a hitch. That airplane has been flying for 3 1/2 years now and currently has 498 hours total time.

That plane has taken Don and Kim to Oregon, Arizona, Virginia, Maryland, California, Florida, Wisconsin, and of course here to Texas.

Don is proud to have flown 138 different passengers from age 11 to 90 but like everyone who builds a plane, he credits Kim with both helping and putting up with him during that time.

Don says, "The entire process of building the RV-10 and flying it has been, quite simply, life changing. The people associated with flying are top notch, I will continue to learn and am so thankful that here in Pecan, I am surrounded by so many wonderful people, most of which are so humble despite their years of flying, accomplishments and vast experience, especially the newsletter editor" (Ok that last bit was an editorial ;)



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Do you find it hard or too expensive to maintain your Instrument proficiency? I can help.

I spent time with Redbird simulator operator, Bill Ervin, located at Midway airport in Midlothian, who checked me out in its operation. If you would like to do your 6 landings, holding and tracking in a Redbird simulator I will be happy to operate it for a nominal fee plus the cost of the simulator. This could amount to half of the cost of doing it in the airplane.

FMI: <http://motionairflight.com>

Call Tom at 817-579-1850

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Flying the P-51 "Crazy Horse"
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Flying Roy LoPresti's
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Stunning Italian design -
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KIT FOR SALE

Plans # 21556 purchased
1989. Empennage and left wing
have been completed, all parts
for right wing present. Fuse
frame for wing joint also
present. Phlogiston wing spar
option. Finishing kit and quick-
build fuselage option are still
available from Van's (according
to Van's website). I bought a
flying RV-6 after finishing the
first wing, so it's time to let
the project go. Good
workmanship (modesty aside).
Asking \$3500, reasonable
offers considered. Great
inexpensive way to get into
building.

Pics at <https://picasaweb.google.com/N889RV/RV6KitForSale?authkey=Gv1sRgCNC93ezCj7TrkWE#>
Located at Nassau Bay airport
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I was talking with one with one of our neighbors and the topic of eyes came up, specifically the removal of cataracts and it occurred to me that as we tend to be an older group that many of you might be considering having cataract surgery for health reasons or just to improve your eyesight. It's amazing what they can now do with eyes but as aviators it's a bit scary to allow anyone that close to your eyes with a sharp object. One has to consider cataract surgery carefully because even though it's remarkable when it works, it can be devastating if it doesn't, especially to the pilot.

Few of you may know that I, your humble newsletter editor, had cataract surgery at a relatively young age. Cataracts can be hereditary and in my case, all my siblings and my mother had the surgery before needing it myself. Considering I rolled the dice on LASIK surgery about five years prior, I was a bit apprehensive to gamble again because at the time I was still putting food on the table by flying professionally (now I'm just an amateur). I could find little on the web about the actual experience so while I went through the procedure I kept notes, which I will share with you below. If you are considering the procedure and would like someone to hold your hand and ease the way, give me a call. It won't cost you an arm and a leg nor even an EYE!

June 2008

Yesterday I went for my eye surgery. They started with the right eye as they said that was the worst and my guess is they wanted to create the biggest difference from what you see now and what you will see after the surgery. Apprehension was running high and the prep nurse sensed it. I had a burning desire to call her "Nurse Ratchet" but refrained, mainly because I was still stone cold sober. I was in a prep room with several other patients, all at least 20 years older than myself and all as calm as an undertaker, which is probably who they expected to visit soon. NR (aka Nurse Ratchet) put a small IV under the skin on the top of my hand. She told me that was for some powerful "zonking" juice to be administered before they "blocked" my eye. When I asked her what "Blocking" an eye was she said "Do you really want to know", to which I already knew the answer, NO! Note: Later I found out it involved shoving a 1-1/2 inch needle under my eye but just above the orbital socket bone to numb my eye. NR hooked me up to an EKG machine which would monitor my heart beat and vital signs. For the next 10 minutes, while I messed around trying to trick the EKG machine by adjusting my heartbeat from about 70 down to about 50, (something I have been practicing prior to every FAA physical since I was 17), I watched the nurses roll one patient after another past me in to the operating room, not unlike Henry Ford rolling Model T's to their finally assembly/demise. I finally got the courage to ask NR how many operations the Dr does each time, to which she replied 16. Not as bad as some of those Lasik experts that claim to have done over 100,000 procedures while only being business 7 or 8 years. You do the math and you'll find that they are either the biggest braggars or they work 24/7. Nevertheless I felt like 16 was a fair amount as long as I was not the first nor the last. NR assured me that Dr. Warren was on his game that day. I was scheduled for about 10:30 but was on the bed being prepped by 9:15. Finally NR and a doctor who I would compare to an understudy on Broadway showed up to do the eye "Blocking", which I still didn't know fully about. They plugged a hypodermic needle looking syringe into the thingy on my hand. I was happy because Dr. Understudy looked older than my Dr., Dr. Warren and so I assumed he was either well qualified or doing a subordinate job because he didn't want to have the BIG liability of screwing someone's vision up for life when he sneezed while cutting! Ouch! I looked up at the light while I was pondering all this and it started to go dim. Next think I knew I was awake and the "blocking" was complete. The amazing drug that was administered knocked me out for only three minutes while the procedure was preformed and then I woke right up with no adverse symptoms. My first question was "is that all there is to it?"...yes, and my second question was where can I get some of that sleeping potion?...can't. I imagined when I was younger if I had some of that stuff, the fun I could have had at the school dances!

It wasn't long before I was next to see the undertaker..ah Dr. and they wheeled me into the operating room. There the nurses and Dr. Warren asked me for the 10th time, "What's your name (I stopped giving them fake names like Joe Smogee, because after the 5th time they didn't think it was very funny...no humor, geez), What's your birthdate and who's your Dr. and the one question that really had me concerned, "What are we doing to you today". Earlier I answered that one with "Open heart surgery" which had NR scramble for the paperwork, which always seemed to be just slightly incorrect (which frankly, even slightly incorrect is a bit disturbing). Just before someone attached some more sleep juice to my hand I was assured by Dr. Warren that I no longer had to remind him over and over (apparently I was a bit nervous about that previous mentioned paperwork) that it was my right eye he was to operate on. I again, quietly slipped off to La-La land and was awake in about 10 minutes. That fast it was done! No pain. At what I paid that guy versus the time he actually spent on my eye worked out to be about \$159,878/hour!

Of course I couldn't see a thing because they put a patch over your eye so when you realize your vision is blurry and useless for life they are nowhere around to take a swing at. For the rest of the day I had a great excuse to lay on the bed and watch Judge Judy and other useless TV shows.

Today I went for my follow-up visit. When the nurse took the patch off I told her with great concern, "I can't see a thing". She then told me to open up my eye, which I complied with. My sight was a bit blurry, I was unable to see anything but the large print on the chart and even then I wasn't sure I could read that through my eye or because of my habit of cheating and reading the chart when both are open. What I did notice was the colors! Others had mention to me that the colors would be more vibrant, and that they were, but what was really vivid was the color Black. What I realized is that most things are framed with the color black, which most of you take for granted but when you have cataracts all the colors are fade and the black is more like a grey so what you lose is contrast. For instance, while I sit here and type, if I look at the screen with my left eye the type is grey. But if I look at it with my corrected right eye it looks like someone spilled an ink bottle on the screen. Though my vision is still blurry, because of the dramatically increased contrast I can see things much more clear. Of course this isn't all good news as not only could I clearly see more wrinkles on my hands but on Karen's face. After about the fifth time of mentioning this, she was not sharing my joyful new sight as much as I. I could see the individual hairs on our dog Ziggy and I think I even saw wrinkles on him as well. He wasn't as bothered when I mentioned it. Hopefully my vision will clear up as the swelling of the eye diminishes. When it does I have another date with NR and her miracle sleeping medicine.

Below is a picture of how I saw before and after the surgery. Though I only had one eye done the difference is dramatic. My situation is closest to the picture on the right of the piano player.



NORMAL VISION



CATARACT VISION

Post-op plus two
July 11, 2008

After two days things are beginning to clear up, slightly. As of now I am not too concerned as the Doc and others have said the eye will take a while for the swelling to reduce.

Watching the TV last night was a delicate balancing act, Out of my "old" eye the TV was in focus, but it appeared the Rangers baseball team was playing in San Francisco against the Giants, as they appeared to be playing in fog rolling in from the bay. This, I would never had noticed from my "old" eye but did with the new eye because there was a high level of contrast, though out of focus. It's like looking out of a set of binoculars that aren't adjusted correctly.

I am administering three different eye drop products. One is Omnipred, a steroid which I guess is supposed to strengthen the eye. One is Kibrom, which if it weren't so difficult to see my computer screen I would google and the third is Vigamox. This, the Doctor described, is so strong that no bacteria, fungus or any other nasty biological critter could live in your eye. Still doesn't justify the \$70 cost for just 3ml. OUCH!

Right now I seem to have good focus at about 12 inches. which allows me to constantly look at my hand like a stoned 60's hippie, and see wrinkles and lines I probably haven't seen in years (maybe they weren't there years ago?). I certainly can't fly, though I am able to see traffic in the sky above the house clearer than I have been able to in a few years. The traffic still isn't in focus yet but the contrast is dramatic (see above picture). Driving is probably out of the question and I have yet to determine if I will see "flares" or "starbursts" while looking at streetlights, as others have noted. So far I am limiting myself to walking and riding a bike.

December 7, 2008

It's been a few months since my last entry. Mainly because to this point my eyes have stabilized for the most part. I say most part because I do notice some focus degradation as the day wears on. In the morning, after I get up and get the blood moving I can see about 20/25 distance in both eyes. Reading has been reduced slightly so I prefer to use cheaters to read the morning paper. Intermediate distance, like viewing the computer monitor, is better done without any correction. I suppose this is true with most 50 yo+ eyes and was true for me before the cataract surgery.

I was able to navigate the FAA gauntlet of required paperwork and got back flying. I do find it is much easier to see traffic (even without perfect distance vision) because the contrast is vivid and not something I was used to prior. I now see traffic often, before the FO does!

I have visited the Dr. at least three times since my last entry, this to make sure we are on the same page and have the same expectations. From the beginning I was informed that about 80% of the patients develop a film behind the implanted lens and I also have this film. It's hard to say how this effects the eyes as I don't notice much difference because what I have now is much better than I what I had previously. The "fix" for this is YAG laser. This procedure is not done any sooner than three months after your last eye and according to the doctor this can improve your distance vision to where no glasses are needed, however to put it in his words, "it's a crap shoot." The laser shoots a hole in the film and it dissolves away. After this is completed if your vision is not what you want (good distance, or good reading, but not both with the mono-focal lens that I had implanted) then you can get lasik.

During my last appointment, the last week of November, we decided that I would have the YAG surgery. The earliest I could schedule it was December 22. Since this is covered under our health plan and I have paid my deductible, I need to do it this year so my out of pocket will be minimal. It is to be hoped that with the help of AA medical nurse, Marsha Rikki, who was very helpful in expediting the FAA paperwork, things will go quicker this time. I hope the holidays won't be a hurdle.

December 22, 2008

Today I went for the YAG laser surgery. I was a little apprehensive as I really didn't have a clue what was expected with the procedure. The machine my Doctor used was similar to the machine your eye doctor uses to test the pressure on your eye. You set your chin in the cradle and a bright light is shined into the eye. Then the Doctor fires a laser that is set to penetrate the eye at the exact distance the film is located, which is at the rear of the capsule that holds the artificial lens. The laser is fired several times for each eye. The objective is to shoot a hole in the film that has developed at the rear of the implanted

lens, very much like shooting the star out of the piece of paper, with the machine gun on the Midway of the Texas State

Fair. As my doctor said, "be prepared to be totally underwhelmed with the procedure and you will feel no pain". I didn't feel any pain but what I did feel was a sensation more like a small woodpecker pecking on the rear of the inside of my brain. When I was done I walked out of the office, with eye drops to dilate the eyes. I immediately noticed what appeared to be bugs crawling around in my eyes. These were the "floaters" that the Doctor had warned me would appear. These were the small pieces that were blasted away during the Valentine's Day massacre on my eyes. These small pieces float around in the eyes until they are dissolved into the body. Eye drops are added to help with the swelling before you leave the office. The swelling might last for up to several days but if pain is present then a call to the Doctor is in order. Your vision should not get worse but it may get better! Without glasses I am currently 20/25 and with glasses 20/20, so a small correction would be appreciated. I will know in a few days if I still need to wear glasses when I fly. If I still need glasses and I want perfect 20/20 vision then the next step is Lasik, which can be done 3 months from today at the earliest.

Ok, so there you have it. I swore to you all that if I didn't get some ideas about what to write in this newsletter I would write about myself and then you all would be sorry! Without some input for the next newsletter I might have to write about my colonoscopy next! Readers beware!

Christmas Party Shenanigans



Important people with pieces of paper at the Christmas party



More paper, more people (wish I was there So I could identify and know what this is about)



Happy people eating. Hey is that the ghost of Bill and Debby Scanlon? Didn't they leave here 4 or 5 years ago?



Major award winners!



Do they like the photographer or too much wine?



The worker Bees who made it all work!



Didn't anyone say "Cheese"? At least Dick likes his piece of paper.



Aviatrixes of Chapter 983



Is that her glowing personality or did her dress catch on fire?



Everyone gets a seat cushion? How about the glow from his watch. How much radiation is being emitted from the Phosphorus hands?

Alternator Repairs: Plane Power Tops

If your charging system quits, troubleshooting will save bucks. If it's the alternator, overhaul is usually best, but there are good new ones on the market.

When pilots talk about problems with their airplanes, alternators tend not to be a subject of the conversations. That's because alternators are pretty reliable, which is a good thing because most of our airplanes have just one and they are run to failure items. However, when an alternator does fail, an owner is suddenly thrust into a confusing world of original equipment replacements, upgrades, overhauls, new manufacturer replacements, core credits, repairs and prices that can vary by 400 percent.



A Kelly Aerospace—now Hartzell Engine Technologies—gear-driven alternator in place. Good cooling is a must for alternator longevity.

We'll explain what an alternator does, why it's important to troubleshoot electrical system glitches before buying replacement parts and what your options are if your alternator truly has slipped its mortal coil.

The Basics

The electrical systems in our airplanes rely on a battery to start the engine. Once running an alternator or generator provides the power for the electrical system and to keep the battery charged.

Alternators can produce their rated amperage output at low engine RPM—

important for night ground operations, and a big advantage over generators. However, unlike a generator, an alternator must have electrical power in the system to operate—if you prop start an airplane with a flat battery, the alternator is not going to work.

The alternator takes the electrical power, at least one to four amps, that comes into it through the field terminal and increases it via wires rotating in a magnetic field to the rated amperage, which is available at the output terminal.

A voltage regulator (VR) senses the voltage in the electrical system and varies the excitement to the magnetic field in the alternator, which adjusts the output of the alternator.

The alternator output voltage is higher than the battery rating so that the battery stays charged. Silicon diodes in a rectifier bridge convert the AC power output from the alternator to the DC power the electrical system needs.

Alternators and electrical systems are sensitive to voltage spikes, so an overvoltage relay (OVR) is in the circuit to take the alternator off line if the voltage goes above about 16 in a 12-volt system and 32 in a 24-volt system. VRs that have an OVR built in are referred to as alternator control units (ACU).

Transient voltage spikes will cause a VR or ACU to take the alternator off line. Turning the alternator switch (or master) off for a few moments and then back on will bring the alternator back on line if the problem was transient.

If the alternator doesn't come on line, it's time to reduce the electrical load on the battery (or rely on the standby alternator system) and land as soon as practical to have the system problem fixed.

What's Broken?

We had a number of owners and maintenance technicians emphasize the importance of proper troubleshooting before spending money to replace electrical system components.

good cooling and were not



Loadmeter on a dual-alternator Mooney. Rocker switches for dual alternator installation.

Mike Busch, principal of Savvy Aircraft Maintenance Management observed that he has often run into the assumption that if there is a problem with the charging system then the alternator is to blame.

Curtis Hughes, outside sales manager of Quality Aircraft Accessories, an alternator repair and overhaul facility, said that an owner may expect to replace one and maybe two alternators between engine overhauls. If it gets to be three or more, there's probably something else wrong with the charging system causing the problem.

Alternators live in a difficult environment of heat, long times between use and demand for a high percentage of rated power during operation. We had mechanics tell us that in some installations where cooling was an issue because of bad baffling or simply poor design, they would see alternator life drop to as low as 300 hours, whereas alternators in airplanes

that were flown regularly had good cooling and were not operating at a high demand, were making as much as 2000 hours before failure.

It's Broken - Generator

For the owner of a generator-equipped airplane that was dealing with a generator which had expired, the unanimous recommendation was to upgrade to an alternator kit.

Derek DeRuiter, proprietor of Northwoods Aviation in Cadillac, Michigan, said that he has been very satisfied with the kits manufactured by Plane Power of Granbury, Texas. The STC instructions are clear and easy to follow, and Plane Power's website includes feedback from owners who have included pictures showing the process of kit installation.

We agree that anyone with a generator-equipped airplane and who does any night flying, should seriously consider spending the \$500-\$800 for an alternator conversion kit as opposed to the \$300-\$500 for a rebuilt or overhauled generator. It will improve low engine power electrical system operation, reliability and get a weight savings of a few pounds.

It's Broken - Alternator

For the owner of an alternator-equipped airplane, the number of options available upon death of the alternator are daunting. We learned that most owners tend to simply stick with the original equipment alternator and arrange for an overhauled, exchange alternator to be installed.



Voltage anomaly annunciated.

Prices vary with the size of the alternator and whether they are belt- or gear-driven, with gear being slightly more expensive. Overhauled alternators are available through

numerous sources, from overhaul shops, outlets such as Aircraft Spruce and the various alternator manufacturers. We saw prices ranging from \$350 up to \$900.

Curtis Hughes of Quality Aircraft Accessories said that he observed that owners usually stick with what was in the airplane, although there are those times that a model simply isn't available. He felt that was the most common reason to cause an owner to buy something different.

If time is of the essence for a replacement, we found that maintenance technicians tend to recommend either going with an overhauled unit from a shop or manufacturer they trust, while returning the dead alternator for a core credit. In most cases, the overhauled alternator can be in the shop the next day.

Where time is not of the essence, we liked the approach taken by Mark Weigand, a maintenance technician in the Detroit area. If the alternator has worked well, he recommends sending it to a good specialist shop with instruction to bench test or tear down and advise. Often the alternator is in good shape and replacement of a \$50 or \$100 part will put it right for several hundred more hours. If the problem is worse, and the owner has been happy with the alternator, it can be overhauled and back in a week.

We did get consistently negative comments on the longevity of Kelly Aerospace (which has been bought out by Hartzell Engine Technologies) alternators due to perceived poor quality control. A number of the people we interviewed recommended not overhauling those units.

However, we were also told that Hartzell has gone through the Kelly equipment and replaced or upgraded much of it, as well to bring it into compliance with the rest of the Hartzell line and is upgrading QC procedures. This is encouraging, in our opinion.



A belt-driven Plane Power alternator, installed.

When we asked maintenance technicians and overhaul shops what companies they'd go to for new alternators the first name we heard was Plane Power. Its dual-cooling fan design and the company's "exceptional" customer service and warranty support were widely praised. Its new, 150-amp, alternator was mentioned by a number of people who noted that because there aren't any airplane systems that demand more than 100 amps, so the Plane Power alternator "must be hell for stout with a rectifier assembly and brushes that are robust," per one commentator.

Others spoke highly of Tempest, which one person referred to as "over-engineered, and I mean that in a good way." He said the price point was higher, but he felt the quality made it worthwhile.

InterAv was felt to be a good unit, but we were told by users that there is sometimes difficulty in the supply chain.

We got recommendations on good overhaul shops, and while we are sure there are more, these got only positive comments from the people we interviewed: T & W Electrical Services, Michigan; Quality Aircraft Accessories, Oklahoma; Modified Aircraft Accessories, Kentucky; Aircraft Systems, Inc., Illinois; George's Electrical Service, California, and Aircraft Electrical Components, California.

Conclusion

When the charging system goes offline, make sure that careful troubleshooting is performed before replacing any parts. If it's a

If it's a generator system, upgrading via an alternator system kit is worth the money, in our opinion. If the alternator is bad, and there is time and it's not a Kelly unit, we suggest having it inspected and repaired or overhauled. If time is of the essence, buy an overhauled unit from a reputable facility or, if you go with a new alternator, we like Plane Power.

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Know your members?

Here are two of the longer standing members of t EAA 983 Chapter. John McComas has graciously offered your choice of any of the toys in his hangar to the first person who sends the right guess to Bubwana@charter.net (OK I haven't actually asked Don but I'm sure he'll agree!). Relatives are not eligible.

If you have Old timey pictures of you that you would like to enter in the "Know your members" sweepstakes, scan them and send them to the above email address. Until John's hangar is clear we have plenty of prizes!

Best of luck "We're all counting on you Striker"



If you have stories, articles. jokes or anything that you would like researched (IE: avionics, airplane kits, famous people, send your ideas my way.

**PEOPLE DON'T MAKE ME COME
OUT THERE AND BEAT IT OUT OF
YOU!**