

# WIND IN THE WIRES



The Newsletter of Chapter 26, Experimental Aircraft Association ❖ Seattle, Washington ❖ Volume XVII No. 3 ❖ Mar 2009

## NEXT MEETING:

2<sup>nd</sup> Thursday of the Month  
March 12<sup>th</sup>, 2009  
7:30 PM

## LOCATION

Opportunity Skyway Bldg.  
6524 Warsaw St.  
S. (N.W. Corner of Boeing Field)

Chapter Web Page

[www.eaa26.org](http://www.eaa26.org)

## MARCH MEETING

### Submarines Just "Fly" Underwater...Don't They?

Thousands of pilots have built airplanes. But what happens when a pilot...with the help of a few dozen CAP cadets... builds a submarine? After all, how hard could it be? It just flies underwater, right?

Ron Wanttaja was one of the cadets, and the last skipper of the "Sea Wasp"...North Dakota's first and only submarine. Come to Thursday's meeting and hear how it came about!



## FUTURE EVENTS

Apr 21-26: Sun-N-Fun, Lakeland FL

Apr 25: Skagit Tulip Fly-In & Air Show

May 16: Summer Thunder 2009, Chilliwack BC

June 9: Wally Peterson Memorial Fly-In, Chelan

June 20-21: Olympic Air Show, Olympia

July 8-12: Arlington Fly In



### **EAA Names Tom Poberezny Chairman**

EAA has announced the appointment of Tom Poberezny as chairman of the board. EAA's founder and previous chairman of the board, Paul Poberezny, 87, officially stepped down as chairman earlier this month. Tom will continue with his current duties as president while also assuming the chairman's role.

Additionally, Tom Poberezny announced a leadership succession initiative to prepare the organization for the next phase of growth. He will begin work with the Board to initiate and lead a search for a new president. Continued success and continuity of leadership are key objectives.

### **LASP: The Next Chapter**

The end of February also signaled an end to the comment period for the Transportation Security Administration's Large Aircraft Security Program (LASP), but not to the industry-wide effort opposing the TSA plan. More than 4,200 comments were submitted to the docket, which according to USA Today were the most comments TSA has received regarding any single initiative since the agency was created in the wake of 9/11.

EAA continues to work closely with TSA and Department of Homeland Security (DHS) officials toward a more reasonable approach to general aviation security through use of a negotiated rulemaking committee. EAA is also continually meeting with members of Congress on the proposal, including an invitation to attend a roundtable discussion next week on The Hill hosted by House Aviation Subcommittee Chairman Rep. Jerry Costello (D-Ill.) to further press the issue.

### **User Fees Issue Resurfaces**

The recently unveiled Obama Administration's proposed budget includes a line item calling for aviation "direct user charges" - in other words, user fees.

Page 129 of the White House budget proposal suggests user fees to replace some repealed aviation excise taxes. Like some previous iterations of user-fees proposals, this one specifies that "the user charges are considered discretionary and offset discretionary budget authority and outlays." This means there's no guarantee that proceeds from these user fees would apply toward NAS modernization, the Aviation Trust Fund, or other special aviation needs. Rather, they would simply offset the general deficit.

Consistent with previous opposition, EAA's government relations staff unit stands behind its analysis and conclusion that a user fees system would draw disproportionately from general aviation to fund the FAA and air traffic control operations.

### **FAA Releases LSA Assessment Project Update**

The FAA recently provided a status report for its ongoing light-sport aircraft assessment project with an open letter to the light-sport aircraft industry. Assessment teams have visited 23 of 29 randomly selected U.S. facilities thus far, and FAA evaluators expressed confidence that LSA manufacturer's compliance can match that of the commercial aviation manufacturers, further validating the use of industry consensus standards and compliance self-declarations for the LSA industry.

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### **PRESIDENT'S MESSAGE...**

## **...that durned Ethanol again.**

I received an e-mail from fellow EAAer, Dean Billing from Sisters, OR. He is helping spread the word for support of ethanol free premium unleaded gasoline legislation with his website [www.e0pc.com](http://www.e0pc.com). He is also appealing to other groups citing that ethanol blended fuels should not be used in any 2 cycle engine, emergency standby generators, all watercraft, antique and classic cars and motorcycles, as well as all aircraft. So spread the word to your boating friends and small equipment users. In our state, HB-1903 was looking like it was making good progress. It had received a Do Pass recommendation from the House Committee on Technology, Energy, and Communications. HB-1903 was then referred to the Transportation Committee, and received a public hearing on 24 Feb. The Western States Petroleum Association (WSPA) sent Mr. Greg Hannon to express their opposition to this bill on 24 Feb. You can read a text version of that testimony, as well as one person's explanation of what was incorrect from that testimony at the [e0pc.com](http://e0pc.com) forum.

Unfortunately, someone at the online forum reported that the deadline for policy bills had passed, and the bill did not make it out of the Transportation Committee. Some folks believe that business interests opposing the bill were successful in influencing the Transportation Chair, Rep. Clibborn. So for now, it appears this bill is dead. However, if we start getting folks to write in to their State Representative for their local Legislative district, as well as those representatives on the Transportation Committee, then perhaps this bill may get resurrected. Remember, the squeaky wheel gets the grease.

#### E0pc forum link

<http://e0pc.com/forum/index.php?topic=61.0>

#### State House Bill 1903 link:

<http://dlr.leg.wa.gov/billsummary/default.aspx?Bill=1903&year=2009>

#### KOMO news link on "dirty fuel"

<http://www.komonews.com/news/local/39767957.html>

#### ... and Pacific Northwest Flying forum has some good info.

<http://www.pacificnorthwestflying.com/index.php?topic=2690.0>

**Continued on  
Next Page**

## *President's column, continued*

In one forum thread, it was reported that fuel distributed from Seattle has ethanol blended at the distributor, but fuel originating from Bellingham and Anacortes was not. Unfortunately the same post reported Bellingham was going to begin blending ethanol starting late-spring. Due to a federally mandated law, the Energy Independence and Security Act of 2007 (EISA 2007), sounds like pretty much all auto gasoline across the country will be E10 by the end of 2010. This supersedes the Washington law requiring a 2% bio-fuels blend rising to 5% over time. The only way around this is a state law that mandates the availability of non-ethanol blend fuel, which is what HB-1903 was going to do.

Bottom line, keep testing your Mogas. Your favorite station is likely to become ethanol blended in the near future.

### Memorial Tile

At the last meeting we held off from voting on what to say so folks could submit ideas and they could get printed in the newsletter. Here's the ideas:

#### **Dale Vickland format:**

*GEOFFREY SHARPLES 1926-2008*

*EAA 52125 CH 26 SEATTLE, WA*

#### **Ron Borovec suggestion:**

*GEOFF SHARPLES EAA 26 PRES*

*HUSBAND FATHER PILOT FRIEND*

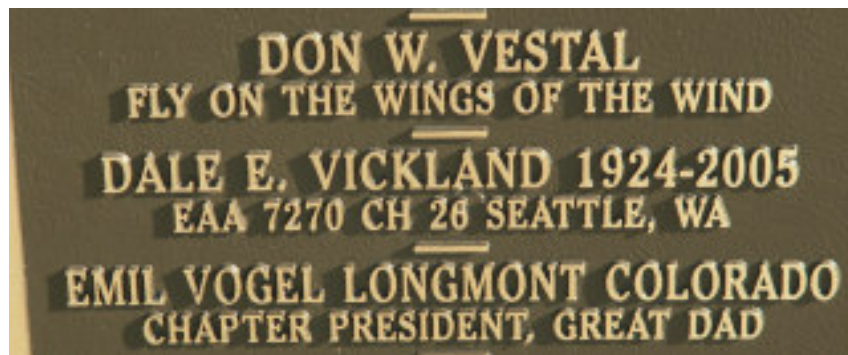


### **DUES ARE DUE!**

- Dues are \$16.50 per year, due in **January**.
- If you are a prospective new member we will be happy to send you a couple of complimentary newsletters.
- Please fill out the membership form.
- Make checks payable to "EAA Chapter 26", and pay Treasurer at the next meeting or mail your check to:

EAA 26,  
c/o Tony Livic  
3546 Gangmarken Ln NE  
Bainbridge Island WA 98110

(Note: Members who have not paid by March will no longer receive a newsletter)



## ***Gimme that Old Time Electric... or, Preferably, Not***

Back when I was a young'un, I owned a 1946 Willys Jeep. Not an common choice for a teenager in the early '70s. We were supposed to drive a Mustang, or Camaro, or some late '50s Plymouth with the exhaust half rusted out and flames painted on the side.

But, I had the Willys: 60 HP flat four, rag top (literally...a new convertible top would have cost 25% what the car was worth), an imitation .50 cal Browning machine gun (I was young and foolish) and a gen-u-wine Delco 6-volt generator/regulator.

I had plenty of mechanical problems with that old Jeep, but problems with the generator and regulator seemed to predominate. There always was a problem with the system. I learned **way** too much about the intricacies of the Delco-Remy power system.

When I left for the Air Force, I sold the Jeep, and since then, I've owned a series of cars with alternator systems that have been trouble-free.

But 13 years ago, I bought my Fly Baby...and there it was again, a generator with a Delco-Remy tag, and the same words stamped atop the black-enameled regulator case.

Of course, it started having charging problems almost immediately. I had some strange experiences getting it fixed, but at the time, I concentrated on getting it repaired rather than slaking my curiosity.

Then, last month, it conked out again. This time, I did a lot of research so I'd understand the system.

So, for those with older aircraft and homebuilt still packing generators instead of alternators, here is what I learned.

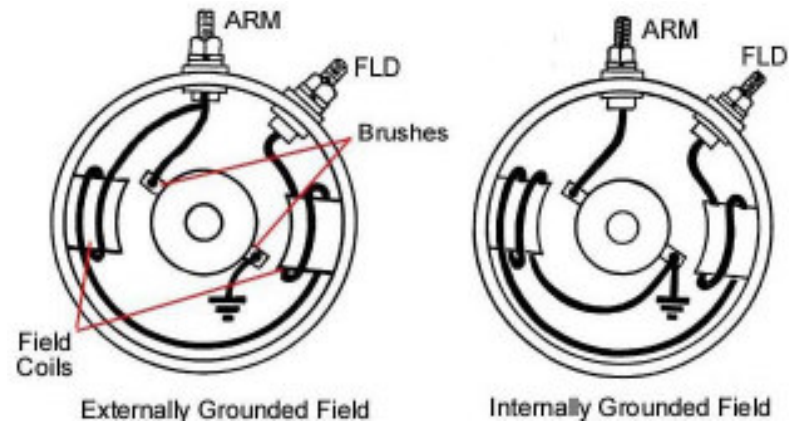
I'm not going to go through the basics of how generators work...the magnets crossing the field lines, the brushes making

contact with the commutator, etc. Instead, I'm going to discuss the permutations of the generator world, and how to navigate the right path through them when trying to trouble-shoot your own airplane.

At the end of this article, I'll list the web pages that include both this basic information and which helped me understand my system.

### **Externally vs. Internally Grounded Field**

One of the big surprises to me was that there were two basic kinds of Generators: Those with externally-grounded fields, and those where the fields were internally-grounded. Here's great image that shows the internal differences:



This site gives a procedure for how to tell which you have:

<http://www.vernco.com/sparks/id569.htm>

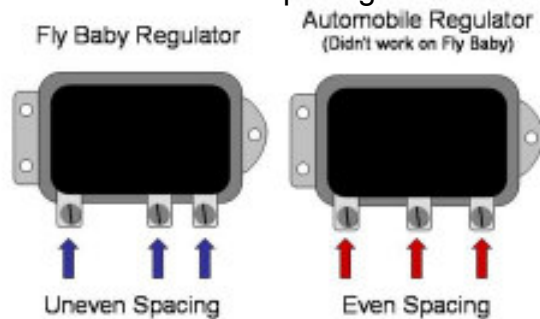
My Fly Baby's C-85 mounts a Delco-Remy generator with an externally-grounded field. The Delco generator service manual discusses both types (it refers to the internally-grounded type as having a "bucking field coil."). Since my own experience is with the externally-grounded type, I'll limit the rest of this article to those.

## Gimme that Old Time Electric (Continued)

### The Regulator Mystery

When I had my earlier problems with the charging system, the local auto electric shop checked out my regulator and said it wasn't working. I bought a new regulator from them, but it didn't solve the problem. I eventually got my generator rebuilt, and still the system didn't charge...until I replaced the new regulator with the old "broken" one.

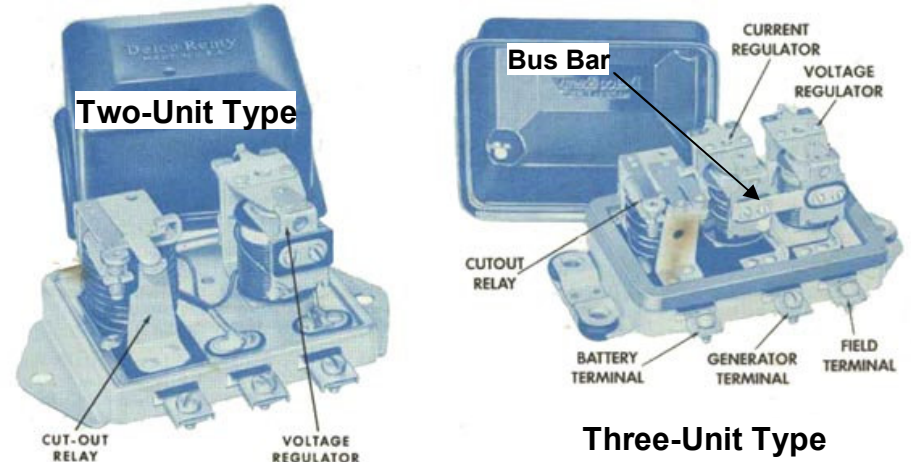
I went through a lot of regulators on my old Jeep, and replacing them was never a matter of a part number...just a trip to the parts store and saying "Gimme a 6-volt regulator." So that's what I'd done at the auto electric shop. But when I did a side-by-side comparison of my new regulator with the older aircraft one, I noticed a subtle difference: The spacing of the terminals was different:



I shrugged it off, back then...after all, my system was working again, with the old regulator.

But when the new problems arose last month, I wanted the answer. A bit of digging online, and I found a neat old Delco-Remy service bulletin that explained the differences:

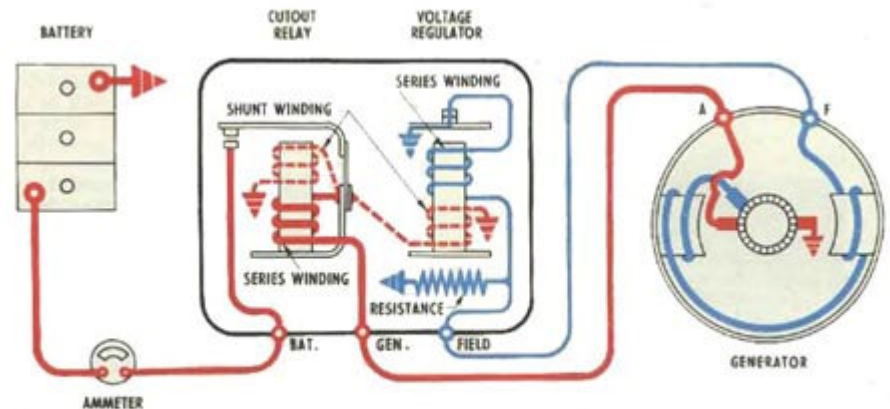
My Fly Baby's regulator is what Delco calls a "Three Unit" type, vs. the Auto regulator which is a "Two Unit" type. The difference? The "Units" refer to the number of control relays inside the regulator. Both have a cut-out relay and a voltage regulator as well. Because the current limiter is connected to the voltage



regulator by a bus bar, the terminals associated with the two relays are closer together.

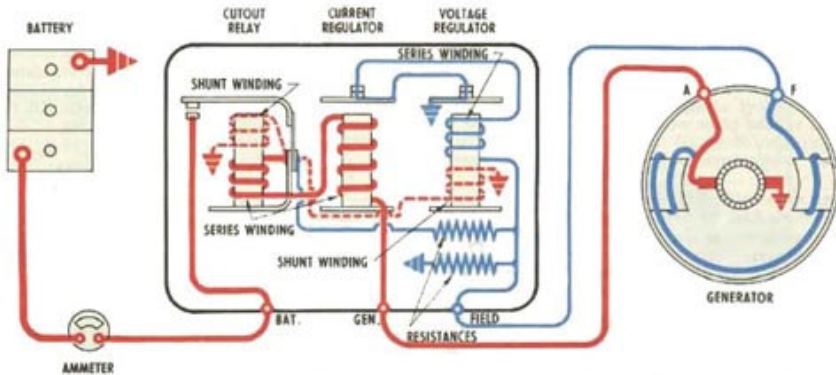
Operationally, though, what's the difference?

It's pretty simple: The two-unit type was designed for a three-brush generator... the third brush design means the generator doesn't need an external device to limit the current output, which meant it could use a simpler regulator!



**Generator with Two-Unit Regulator**  
(Three-Unit Type Shown on Next Page)

## Gimme that Old Time Electric (Continued)



**Generator with Three-Unit Regulator  
(Includes Current Regulator)**

No wonder the two-unit one didn't work in my airplane...and the airplane one failed the test for a two-unit type at the auto store.

The Delco Service Manual for the Three-Unit regulator says, "Regulators covered in this bulletin are most often used on aircraft and 24-volt applications." So I guess I know....

### **You're Not Driving a Willys Any More, Ron**

That current-limiting relay is one of the fundamental differences between classic automotive and aircraft generator systems.

On my Jeep, I could install a generic regulator because the generator itself limited its output current. But the three-unit, aircraft-style regulator must be matched to the generator in order to keep the regulator from demanding more current than the generator can deliver!

I'm sweating that a bit. Last month, it turned out that my regulator had gone bad, and I replaced it with a three-unit type I'd picked up at the Arlington Fly-In Swap Meet ten years ago. I have not (yet) been able to find a list of the regulators that go with each generator. So it's possible that my regulator could let my generator burn out...but, since my Fly Baby doesn't have

landing lights or any other traditional high-current devices, I'm probably OK for now.

Zefftronics sells a "Generator Controller" that replaces the old mechanical Delco units, but you do have to know the rated output of your generator. Here's a list of the current ratings for several small Delco generators:

Delco-Remy No. 1101876: 15 amp (this is what I have)

Delco-Remy No. 1101890: 20 amp

Delco-Remy No. 1101879: 25 amp

Delco-Remy No. 1101898: 35 amp

For now, I'm flying again, and I'll keep a close eye on the ol' ammeter.

### **Links for More Information**

Here's some links to a couple of sites that helped me research my charging system problems.

#### Second Chance Automotive:

<http://www.secondchancegarage.com/public/91.cfm>

*A series of great articles on how generators work.  
Check out Page 3 for regulators*

#### Vernco CJ-2A Page:

<http://www.vernco.com/sparks/id569.htm>

*Externally vs. Internally-grounded fields, and how to  
"polarize" a generator for first use.*

I've got a lot more information including links to the above sites at my Fly Baby web page:

<http://www.bowersflybaby.com/tech/spark2.html>

**See also the Bomar Flying Service info on Page 9 of this newsletter.**

## **On the Wreckord**

### **Recent Homebuilt Accidents from the NTSB Web Page**

Zodiac - Idaho: The private pilot, while being checked out by the aircraft's owner, reduced engine power on short final and the aircraft's nose dropped. The owner said the private pilot pulled the stick back "too aggressively" and then moved it rapidly forward and the airplane subsequently contacted the runway "quite hard." In response, the private pilot increased power and initiated a go-around. As the power increased the airplane's nose pitched up and the private pilot "shoved" the stick forward. The airplane contacted the runway in a 30-40 degree nose down attitude. After contacting the runway, the airplane's nose and right main gear collapsed.

Supercat - Iowa: The airplane had recently been purchased by the pilot and was being flown to his hometown airport. During the flight, the airplane's engine lost power and the pilot executed a forced landing in a rolling hay field which resulted in the airplane sustaining substantial damage. Examination of the airplane revealed that the fuel tank had ruptured during the impact, however, further examination revealed no fuel remaining in the fuel lines or in the carburetor bowl.

The airplane was not registered and did not have an airworthiness certificate issued by the FAA. According to published data, a typical airplane of the same model has an empty weight of 325 pounds. The maximum legal empty weight limit for ultralight airplanes is 254 pounds. The pilot reported that he was unaware that the airplane was not an ultralight until after he had purchased it. He reported that "the people at the field told me I could fly 60 minutes on 1 gallon. It didn't."

Brubaker F1 - Utah: During a normal landing the airplane veered off to the right side of the runway when the tail wheel made runway contact. The pilot attempted to maintain directional control by applying full left rudder, but his rudder control inputs were ineffective.

The pilot reported that it appeared that the AN3 through bolts, which attach the tail wheel assembly to the tail spring, were sheared.

Challenger II - Alaska: A helicopter pilot reported that after the accident airplane became airborne, it began to "porpoise" which continued during climb. The helicopter pilot said that just after takeoff, the airplane turned left, while still very low, and flew over an area of hangars and buildings on the northeast side of the airport. "At one time we thought he was going to hit one of the buildings due to a steep dive. ...We continued our approach and the aircraft was last observed heading northbound."

Subsequent witnesses reported that they saw the airplane flying northbound, about 100 feet above the tress. The witness said that as it continued northbound, the engine noise increased, and the nose pitched down. The witness said that the airplane's nose continued to pitch down until the airplane became inverted, and it descended nose first into dense woods.

During a telephone conversation with the NTSB, a flight instructor that had been providing primary flight instruction to the accident pilot reported that he had not progressed to a point where he would endorse the pilot for a solo flight.

## **Marketplace**

Estate sale: Acrosport 1 project sitting on gear ready to cover. Acrosport 2 project, substantially complete. Two IO-360 engines, additional Acro 2 fuselages, additional parts, materials, and shop tools. Located in heated hangar in Salt Lake City, to be sold by email bids. Contact Lyle at: 1-801-621-2087, or Email: [rwacro@gmail.com](mailto:rwacro@gmail.com).

RV-10 Tail Section for sale: 95% complete). Skip Feher 425 677-5335

Condo T-Hangar at Olympia Regional Airport, Washington for sale. Hangar Number I-5, 1620 Sq. Ft., 44 ft 4" wide door opening - electrically operated bifold door. Two years old with epoxy sealed floor. 110/ 240 volt , 60 amp electrical service on separate meter. \$89,500. Mike and Arlene Dougherty, 253-880-6690.

Zenair 601 HDS Project for sale: Firewall back, including fairings, LR fuel tanks, and lights. Price negotiable. Terry Wilson, 206 522-4006.

Former EAA member Keith Klinck recently passed away and his wife Helen has his Smyth Sidewinder project up for sale. This is a 1960's vintage design, all metal, tricycle gear configuration somewhat similar to an RV-6. The project has a completed fuselage and many other component parts and aluminum sheet. For more information call Ron Klinck at 425.739.0715.

For sale: Tires – 15/6.00-5, 6ply, 2 tires, 2 tubes. Brand new, unused, with yellow tag. These are retread tires that are heavier duty than standard – With deeper treads and harder rubber they'll last longer than new. \$125 for the set. Ross Mahon 206.550.9526 or [Rossair@aol.com](mailto:Rossair@aol.com)

Wanted: Lycoming O-235 engine, will consider any version, prefer run out engine in need of overhaul. Ross Mahon 206.550.9526 or [Rossair@aol.com](mailto:Rossair@aol.com)

### ***Bomar Flying Service Downloads***

This is way, WAY cool.

A web page called Bomar Flying Service...

<http://www.bomar.biz>

...is archiving manufacturer service manuals for a huge variety of aircraft products (including engines, generators, avionics, carburetors, etc.) in PDF format for **free download**.

You can get the Lycoming, Continental, Franklin, Kinner, and Rotax service and overhaul manuals. You can get the pinouts for your avionics, the adjustment specs for your magnetos, maintenance info for your Cleveland brakes, and, yes, all the Delco-Remy manuals on generators, starters, and regulators.

For free.

Go to: <http://www.bomar.biz> and click the "Downloads" link.