



Experimental Aircraft Association Chapter 162. Serving middle Tennessee since 1966. <http://www.eaa162.org>

### Left Seat: Ah, Summer



It's July and the annual gathering of everything aviation at Oshkosh is just around the corner. The Chapter's meeting programs include a review

of OSH arrival and departure procedures by John Beam, and a presentation on what it's like to fly with the new Garmin 696 navigator by Andy Burton. In August we will be hosted by Andy Hawes and have a chance to see progress on his Radial Rocket project, and have a fly-out to a St. Louis Cardinals baseball game. These are the times of the year when it is great to be a pilot and have the privilege of the freedom of flight.

Regardless of your interest and experience with aviation, we want to invite you to c'mon down to any of the Chapter activities, and bring a friend! Fly safe, fly happy, and we'll see you soon!

Dan Masys  
2009-10 President, EAA Chapter 162

### On the Horizon: calendar of events

2009 features programs on *Wednesday* evenings--generally the third Wednesday--of each month, and Saturday "Birds of a Feather" outings. The calendar

is subject to change, however, so for the latest check the Chapter's website at [www.eaa162.org](http://www.eaa162.org)

| Date           | Event Name  | Location         | Presenter/Leader     |
|----------------|---|------------------|----------------------|
| Jul 27 – Aug 2 | EAA Airventure  | OSH              |                      |
| Aug TBD        | Fly Me Out to the Ballgame: St. Louis Cardinals home game | Bistate Parks MO | Bill Hetzel          |
| Aug 19         | Radial Rocket progress                                    | Hawes home       | Andy Hawes           |
| Sep TBD        | Glider Flying at Puckett Gliderport, Eagleville, TN       | 50M              | William Dudley       |
| Sep 23         | Engine Monitors   | JWN              | Peter Cassidy        |
| Oct TBD        | Hands on workshop: Basics of Riveting                     | JWN              | Masys and Sutherland |
| Nov 18         | Survival Techniques                                       | JWN              | TBD                  |
| Date           | Event Name  | Location         | Presenter/Leader     |
| Nov 21         | Young Eagles/Boy Scouts                                   | MQY              | Brian Deno           |
| Dec 12         | Holiday Party   | TBD              | Shelby Smith         |

For more details see [www.eaa162.org](http://www.eaa162.org).

## Avionics and Heat Don't Mix Well

We know we need to keep our aircraft avionics from getting too hot. Standard practice is to install a cooling fan in an avionics stack. But what about portable equipment like GPS navigators we often set on the glare shield exposed to the direct sunlight? It can get very hot in the direct sun. Just feel the dash of your car on a hot sunny day; same for an aircraft. I've measured surface temperatures of 55C (131F) on the glare shield of my Bonanza and, from what I've read, 60C (140F) is not unreasonable to expect. If that's the surface temperature, the internal temperature of an operating device like a portable GPS could be even higher. We need to be concerned about high temperatures melting of electronic component plastics and degrading of battery life of our portable electronic devices.



My EFB setup includes a Bluetooth GPS. I have one made by EMTAC that is very compact and can sit in front of me on the glare shield. It will run for about 11 hrs on its internal battery (when the batteries are in good condition) and

needs no wires to connect to my EFB. The upper temperature limit for the EMTAC is 60C (140F).

For the past couple of years, my EMTAC has worked fine sitting on the glare shield in direct sunlight. However, that changed noticeably Jan. 30, 2009 on a flight from Nashville to Florida. Two hours into the flight, the EMTAC died. Removing it from the sun-bathed glare shield and cooling it down brought it back to life. It worked fine for the remaining two hours of the flight, this time sitting under a makeshift heat shield. There is little doubt it's suffering from over 2 years of exposure to high heat levels on the glare shield. I've replaced it with a Garmin GPS10 which has a nice auto power feature.

This is my second Garmin GPS10. My first one lasted about two years. I'm convinced failure was due to excessive heat sitting on the glare shield

which, at minimum, killed the non-replaceable Lithium-ion battery. Its maximum operating temperature is 60C (140F). The new one is getting better protection from the heat of the sun. The design is simple and low cost. A white cardboard tent reflects most of the solar heat, while the airspace around the GPS10 lets cabin air circulate freely.

Peter Cassidy

## On the Great Circle

The concept of Great Circle routes has a certain romance-of-flight appeal. The arched paths across a flat map that represent the shortest distance over the surface of a sphere are the stuff of trans-oceanic airliners and far flung international routes of commerce. Less widely appreciated is that the GPS in your panel and your handheld unit probably calculate great circle routes when you punch the 'direct to' button. If you are astute and have digital course guidance, the great circle effect can be seen as a few degrees of difference between the starting heading and the ending heading when the destination airport is at least a few hundred miles away.



Today's database-driven GPS navigators make possible a form of flight planning that is quite different than the point-to-point, plan the flight and fly the plan tradition we are taught as student pilots. I had the opportunity to explore the joys and tribulations of this new way of cross country navigation during the 2009 Memorial Day weekend, when more or less on the spur of the moment my wife and I decided to fly the RV-10 from Nashville to the Pacific Northwest and back. We knew from various aviation weather briefing sites that there was going to be good VFR weather in the 'upper left corner' of the country, and there was no serious

frontal activity between Tennessee and Washington state for the outbound leg.

So, instead of laying out a series of individual legs with known destinations and times enroute, we simply punched the destination airport – W28, Sequim Valley airport on the Olympic Peninsula northwest of Seattle – into the GNS480 navigator and also into the GPSmap 496 unit. The 496 became our enroute information and ‘what if’ planning resource, while the panel mounted GPS controlled the autopilot and guided us on the 2000nm great circle route to the destination.

The 496 is blessed with XM weather and the AOPA airport directory database, as well as ‘look ahead’ capability by moving the map cursor along the calculated flight path. (For this flight we also upgraded the XM subscription to add inflight audio, and this flight will always be remembered for continuous 60’s and 70’s oldies entertainment as much as the grand scenery enroute!) While cruising on course and at altitude – with uncharacteristic tailwinds northwestbound at 8500 feet – the 496 enabled me to put the cursor over upcoming airports that were within ten miles or so of the direct route, and then access the AOPA airport directory pages describing services available, including hours of operation and types of fuel.

Though the auxiliary fuel tanks in the –10 give it a no-wind, no-reserve range of over 800 nm, we chose stops instead by flight time, averaging about 2 to 2.5 hours per leg. That made for refueling and ‘stretch your legs’ stops at Kirksville, Missouri and Springfield, Nebraska. A 2:15 departure out of John Tune put us on the approach to Sheridan, Wyoming as the sun was beginning to set, with more than half of the 2000 nm distance already under our wings. After a pleasant overnight in Sheridan, next morning’s continued VFR weather made for a spectacular crossing of the Montana Rockies near Missoula, a somewhat bumpy traverse of the plains of eastern Washington state, and a final leap over the snow-capped Cascades that put us at our destination on the Olympic peninsula by noontime the second day.

Words don’t do justice to the remarkable sensory experience of leaving the rolling hills and green

farmlands east of the Mississippi, encountering the open expanses of the plains states, and coming upon the majestic grandeur of the western mountains, all at GA altitudes where you can count the cows and cars, and in a few hours’ time. America the Beautiful isn’t just a song to any pilot who has had the opportunity to take a similar voyage.



We had a back-up plan in case the weather gods turned angry. In addition to the time-honored option of a 180 degree turn if the NexRad weather information or our eyes told us that VFR conditions were not going to hold, we were also hauling IFR enroute charts and approach plates for all of the states we were flying over. I anticipated calling the appropriate Center for a ‘pop-up’ clearance if needed, but the need never arose.

Flying by the AOPA airport directory database in the 496, like flying with the printed book or any facility directory, isn’t perfect. The self-serve pumps were not working at Kirksville, but the lineman gave us the self-serve price for the fuel he pumped from the truck. He also asked if we had gotten the NOTAM that the pumps were out of service, and I had to admit this piece of information was missing from our impromptu flight planning method. We also landed at one small agricultural strip near Spokane Washington that was deserted, and the gas pumps had padlocks on them. Since we had generous fuel reserves at all points in the trip, none of these occurrences meant much in terms of inconvenience, and added to the overall pilot education experience of flying this way.

After a couple of days in the uncharacteristically gloriously sunny Pacific Northwest, the return trip to Nashville using the Great Circle direct approach had a few twists and turns, literally. A strong low pressure area was parked near the Canadian border near Glacier National Park, and avoiding the storms and mountain obscuration that it caused turned us on a more southerly route back. Maintaining VFR over the mountains got the RV-10 up to 17,500 feet for a while, and it was clear that this kind of flying is best done with onboard oxygen and an airplane that flies comfortably in the mid-teens. By mid-afternoon we and a few other airplanes were on the ramp refueling at Cheyenne, Wyoming (including an unhappy Air Canada jet deflected from its approach to Denver by convective sigmets and a tornado) and we watched the boomers building in lines on all sides on the XM weather display. Rather than picking our way through it we declared half a victory and spent the night in Cheyenne.

Monday of Memorial Day weekend was one of those 'hells-a-poppin' kind of days with towering cumulus and thunderstorms peppering the entire eastern half of the US. So for our last leg, which was 500 nm from Concordia, Kansas to Nashville, we reverted back to a more traditional point-to-point flight plan, and filed IFR direct. There were lots of deviations around cells with 'moderate to extreme precipitation' and a few with sparks inside, but the homecoming to John Tune was in VFR conditions with a liberal dose of summer haze and sultry temps.

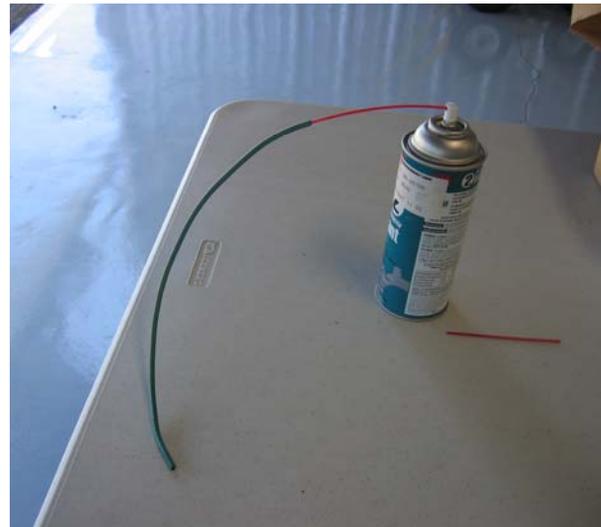
4000 nautical miles in a weekend was a grand adventure, a visual treat, and a reminder of the special privilege of being able to just go fly in America, for vast distances and over amazing scenery. The wide open spaces of the west provide lots of room for changes of course to stay VFR, and the real time weather and destination information available from the current crop of GPS navigators make it a treat to be On the Great Circle. Give it a try sometime.

Dan Masys

### Tool Tip: Long-Neck Oiler

Airplanes need regular lubrication but some of the lube points are hard to get at so you need a long flexible-neck for your lube can. Aircraft specs usually call for ordinary engine oil like SAE 30. However, pressure can lube like LPS is much more convenient. There are three varieties depending on what needs lubricating. LPS 2 is a good alternative for SAE 30. Since the spray tube on those cans is only 4" long and is rigid, it's hard to reach places you often end up getting oil everywhere and creating a mess. What's needed is about a 12" flexible extension for that little plastic tube.

You can make a flexible extension for a pressure lube can by using the insulation from #12 AWD solid copper wire. The spray tube that comes with LPS and similar pressure lubricants is 0.085" OD, while #12 wire is 0.081" OD. The result is a nice snug fit over the plastic tube. Be sure to use wire that



has a fairly flexible insulation. I used a piece of scrap submersible pump wire. I removed a 12" piece of insulation and pushed the plastic tube about 1/2" into the insulation. You have to handle the assembly carefully since the plastic tube is not held very securely in the lube container. Some lubricant cans have a longer than normal port to hold the tubing. They would work fine. Unfortunately, the ones I typically, LPS, are not designed that way.



Brian Sutherland found a commercial solution called Aim-A-Squirt is available from Aircraft Spruce for \$4.95. I just bought one. For the price you get two 32” flexible tubes. It will be interesting to see if Aim-A-Squirt is better than my wire insulation solution. I doubt they are. What’s

needed is a can cap like the one shown in the Aim-A-Squirt picture.

Peter Cassidy



**Sightings**



Leaving the airport, Blosser Municipal, Concordia, Kansas



Experimental Aircraft Association Chapter 162

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