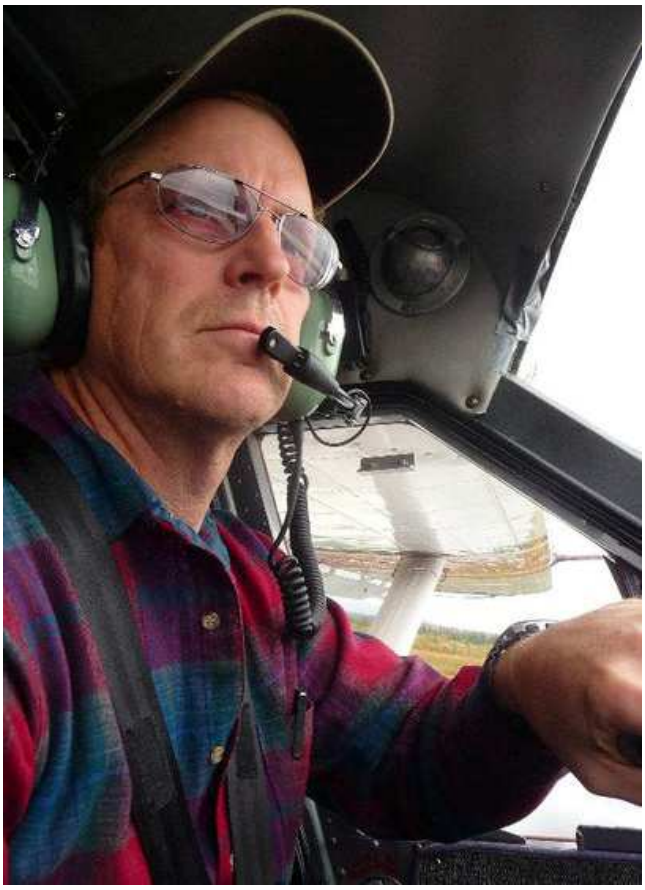
EAA 430 Flyer

Experimental Aircraft Association Chapter 430 Serving Sequim, Port Angeles and the Northern Olympic Peninsula.

A Little Hangar Flying: July the Month of Fly Ins in the Lower 48

Boy, I tell ya, the summer is just here and the Fly ins are all over the Northwest. Not only here but all over the USA. Too many to go to and get those summer chores done. So you have to pick and chose the ones you want to attend.



I have a Cessna 180 that looks really bad. That's why I'm going to a few fly ins. One is the 180/185 fly-in in the Back Country of Idaho. It's called the Johnson Creek Fly Inn. Mostly 180/185's from all over the US.

Now when I was up in Alaska flying, every place I went to was a back country airport or off airport landing strip. Why do I go to this place? Maybe it's the comradery of the guys with like airplanes! Johnson Creek has a runway in between the hills. The hard part is it's HOT/ HIGH and the WINDS are squirrely. Then there's mean ol' Mr. Density Altitude coming into play. That's the idea of this article this month.

Here's a quick way in the cockpit to check the Density Altitude. Also, some other things to think about and things I've learned over the years.

Take your altimeter and SET the Field Elevation, then set 29.92. See the difference? The 29.92 will give you Pressure Altitude. Now there is temperature. That's where Density Altitude comes into play. Density Altitude is Pressure Altitude corrected for Temperature. You can get the Temperature off your cockpit thermometer. There's a formula that will give you Standard Temperature at any altitude. That's addressed below. Basically the colder the temperature is from standard day the lower the Density Altitude. Vice versa, the hotter it is, the higher the Density Altitude. Sometimes in the winter in Anchorage, Alaska while figuring the Density Altitude we would be way below Sea Level. Great performance.

Next: you can then go to your Aircraft Operation Manual and with this information gained below get the Takeoff and Landing distances needed to make a safe arrival and departure within the

performance parameters of the aircraft. If your loads are too big, then one option is to make two trips to get all your stuff in or out.

Example: Take your flying buddy/wife out last after you see how underperforming the airplane is with all the stuff you needed to camp with. Plus, go in with half tanks of fuel. In other words, fuel for the trip. There's no need to fill the airplane up.

I did just that and took off when the air temp was low in the early morning at a fly in years ago. I also had half tanks. The place was Pagosa Springs, Colorado. Density Alt. when I landed was 11,300 at 1:00 PM. When I took off it was 7800 @ 8:00 AM. (NOTE: Most AWOS will, if listened to, tell you the density altitude to help make those go, no go decisions.)

You can calculate Density Altitude on your wiz wheel/E6B. Wait! No one uses those anymore; I mean the GPS in the airplane. Your laptop or iPad. There actually is an E6B in the bottom of my Flight Bag. For use when the electricity is out and to show people I know how to use one. Go to the performance page. Most GPS's have them. Learn to do it before you go somewhere that is guaranteed to have a higher than normal density altitude. Just be aware of what you are getting into.

Now some simple math…It's the only time in my life I wish I had paid attention in school. Hahaha! I was looking out the window most of the time. But I didn't know I was going to be a Pilot. I just knew I had to find a job that allowed me to look out windows.

The simple math…Ya right. This is a pretty simple formula since two of the variables will always be the same and the other two are easy enough to find. Let's say our current altimeter setting is 29.45 and the field elevation is 5,000 feet. That means (29.92 - 29.45) x 10 + 5,000 = 5,470 feet. That's your pressure Altitude. You can see this by doing what I mentioned above. Know what the field elevation is and put 29.92 in the Colesman window of the Altimeter. The indication will be the Pressure Altitude. Simple. Now let's move on to step two, finding density altitude. Here's the formula:

density altitude = pressure altitude +
[120 x (OAT - ISA Temp)]

Now, before your eyes glaze over, here's how simple this density formula is: we already have the value for pressure altitude from our last calculation; OAT is degrees Celsius read off our thermometer (let's say it's a balmy 35 °C today) and ISA Temp is always 15 °C at sea level. To find ISA standard temperature for a given altitude, here's a rule of thumb: double the altitude, in this case 5000 feet X 2 = 10, then subtract 15. Which is -5. (For example, to find ISA Temp at 5000 feet, we multiply the altitude by 2 to get 10; we then subtract 15 to get -5.

So, in the example above:
density altitude = 5,470 PA + [120 x (35 - 5)]
Working out the math, our density altitude is 9,070 feet.

If you have been to 9000 feet MSL in your airplane you know it is a dog. So plan accordingly.

Now before you get there if the density altitude is way up there. Guess what? So is your landing roll and ground speed due to a higher true airspeed. Your indicated speeds for all operations are the same…Flaps gear etc. What's different is your True Airspeed, which is going to be higher than your indicated speed. Which MEANS your Landing Roll will be longer. 25 % longer for every 1000 feet elevation. So plan on using the first part of the runway not the last part. Fly your airspeeds. See the notes below.

Remember:
PA+{ 120 x (OAT-STD Temp)} = DA

Don't forget to lean for Best Power per Aircraft Operating Manual. Aside from leaning, here are some other tips and some good ideas to consider from Crawford, who operates in Boulder density altitudes that top 5,000 feet 11 months of the year according to yearly temperature averages.

• Trust your airspeed indicator, not your eyes, when landing. Groundspeeds can be up to 20 knots faster than you are used to when using the same indicated airspeed (IAS) required by the pilot operating handbook.
• Fly in the evening or early in the morning when temperatures are lower.
• Call a local instructor at the airport where you are going.
• Before flying to a high-altitude airport, know whether your aircraft climbs more efficiently with the first increment of flaps. Many aircraft do, but your results may vary and that first notch may add more drag than lift.
• Be sure the aircraft's weight is below 90 percent of maximum gross weight.
• Don't fill the tanks (see previous tip).
• Fly shorter legs and make extra fuel stops (tough suggestion to accept, but it results in less exciting takeoffs).
• Be ready to ferry one passenger to a lower density altitude, then come back for the other. If you are unsure of conditions, fly around the pattern once alone without baggage to test your aircraft's performance.
• Have 80 percent of your takeoff speed at the runway's halfway point, or abort. For Crawford, that means having 48 knots IAS in a Cessna 172 at the halfway point.

Just another story. In the B-747 old -100's I was many times shutdown because it was too hot to get off the ground in second segment of Take-Off /Climb to safely depart.

What were our options? Reduce the load…not going to happen! Takeoff on a longer runway. Haven't made one that long!!!. Use another flap setting? Nope, second segment was limited due to engine thrust. So the only thing we could do was wait until the early morning until the temperature went down to a legal number. Then one day or many days in Anchorage the temp is down but the altimeter is so low our performance was out of limits. What options? Reduced the load because the altimeter was not going to come back into acceptable parameters until the next day. We are talking low, lows of 28.76 or so.

So Density altitude is a REAL Serious situation. Pay attention to it.

AOPA has a good online course on this subject at https://www.aopa.org/login/asiCourses/?course=mountainFlying&project_code=&_ga=2.71380435.1561281493.1500646370-1185227085.1500646370

Mike Radford

References:
Density Altitude calculations. Flying Magazine, By Stephen Pope October 25, 2011 reworked by Mike Radford.
Mountain Flying tips AOPA Magazine, July 1, 2007 By Alton K. Marsh

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On the Horizon: Calendar of Events

EAA Chapter 430 meets on the last Saturday of the month, in Hangar 10 at Sequim Valley Airport at 10:00 a.m. For directions and additional information about chapter programs, see the chapter website: http://www.eaa430.org

Date	Topic
Saturday, July 29, 2017 Hangar 10 Sequim Valley airport	Chapter meeting and potluck luncheon. Program: Falconry (with guest falcon present!). Learn how the birds of prey do it…
Saturday, August 12, 2017 10:00 am – 2:00 pm	Third 2017 Young Eagle Rally, Sequim Valley Airport
August 21, 2017 Oregon	Total Solar Eclipse viewing.
August 26-27, 2017 0900-1600 Sequim Valley airport	Olympic Peninsula Air Affaire. EAA 430 members are encouraged to participate in ground display of experimental aircraft. Volunteers are always needed to man the chapter information booth.
September 9-10, 2017 Hood River, OR (4S2)	Fly-out to Western Antique Aeroplane and Automobile Museum show and Fly-in

Scholarship Student Update

Our Scholarship recipient, Seth Mulhausen has just finished his Commercial Pilot course and flight check. Next up is the start of CFI training.

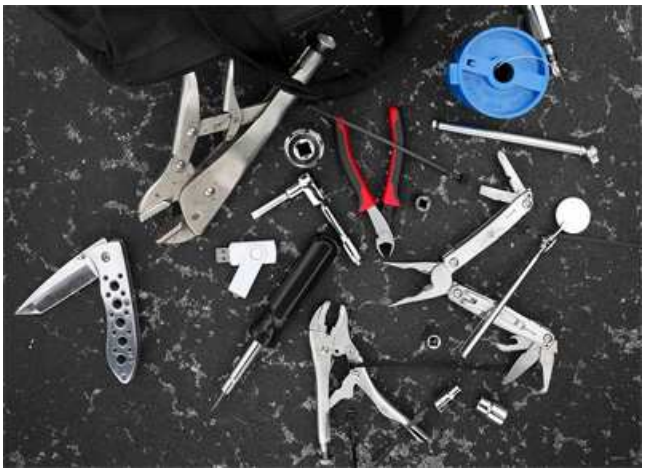
I sent him a Congratulations.

Dave Miller
Scholarship Coordinator

Traveling tool kit: What do you carry in your airplane?

By Mike Busch
AOPA Pilot magazine, July 1, 2017

It's a well-known fact: Most mechanical problems occur between Friday night and Sunday afternoon when you're hundreds of miles from home base. The difference between a minor annoyance and a major travel disruption can hinge on whether you brought along the stuff necessary to get back in the air quickly.



I'm talking about several kinds of "stuff"—service information, a survival tool kit, and spare parts and supplies. I fly lots of long-range missions in my airplane, and I always carry quite a bit of such stuff with me. It has bailed me out of trouble more times than I care to count.

Service information

Service information is perhaps the most important thing to carry. If you have a mechanical problem on a weekend and are lucky enough to find an A&P to help you, he cannot legally work on your airplane without the maintenance manual for your make and model. If it turns out that he needs to order a part to get you back in the air, he'll also need access to the illustrated parts catalog for your make and model to figure out the part number.

Maintenance manuals and illustrated parts catalogs tend to be big, heavy loose-leaf binders. Your best bet is to do what I do: Get a digital copy of your airplane's maintenance manual and illustrated parts catalog, and stash it in the airplane's glovebox or a seatback pocket. Most aircraft manufacturers offer digital versions of their service documents nowadays, and it may also be available from third-party sources. (For example, if you fly a Cessna, check out McCurtain Technology Group at www.mccurtaintg.com.) It's also not a bad idea to upload your digital maintenance manual and illustrated parts catalog to the cloud so you can access it from anywhere using your laptop or smartphone.

It's also helpful to have a list of important phone numbers and email addresses you might need. Make sure you have the phone numbers for your A&P mechanic: work, home, mobile, and maybe the pub where he hangs out on Friday nights. If you belong to an aircraft type club (and you should), make sure you have the club's tech-support hotline number handy. Also, contact information for your favorite parts suppliers.

What about your aircraft's maintenance logbooks? Never carry them in the airplane! The NTSB doesn't want you to, because if you crash they don't want the logbooks to be damaged or destroyed. Your aviation attorney doesn't want you to, because if you're ramp checked he doesn't want the FAA inspector to have access to your logbooks until you've had a chance to make sure all the i's are dotted and t's crossed. I don't want you to, because I've seen too many cases where shops have held an owner's logbooks hostage during an invoice dispute. So keep your maintenance records at home in a safe place, and have any necessary logbook entries made on self-adhesive stickers you can paste into your logbooks when you get home.

Survival tool kit

Creating a survival tool kit to carry in the airplane is an exercise in minimalism. A decent aircraft mechanic's toolbox weighs 400 to 600 pounds and stands five feet tall. In the airplane, you can take only what you think you might need to get home, and nothing more. A survival tool kit has to be light and tight.

The roll-around toolbox I have in my hangar contains 30 different screwdrivers plus two cordless screwdrivers. The survival tool kit I carry in my airplane has only two: a ratcheting screwdriver handle with interchangeable tips, and

a stubby #2 Phillips driver for working in tight quarters.

Likewise, my home toolbox has four entire drawers full of wrenches: sockets, box wrenches, open-end wrenches, offset wrenches, cylinder wrenches, obstacle wrenches, and so on. My survival tool kit makes do with a basic socket set (one-quarter-inch and three-eighths-inch drive) and combination wrench set (one-quarter-inch through three-quarters-inch), supplemented with an adjustable wrench and vise-grip pliers. A few other pliers (regular, needle-nose, diagonal cutters) round out the collection.

In addition to these basics, the most important tools to carry are specialty tools that might be hard to procure locally at a hardware store. Things such as an aircraft spark plug socket and a pair of safety wire pliers. My survival kit also has a wrench designed specifically for removing and installing vacuum pumps (since my airplane seems to have a ravenous appetite for those).

You should tailor your survival tool kit to meet the needs of your particular aircraft, and to conform to your own mechanical aptitude and ambition. How comfortable are you wrenching on your airplane? Do you do your own oil changes? Do you replace your own spark plugs? Because I'm an A&P and fly a complex piston twin, I probably carry more stuff in my survival tool kit than you might want to carry in yours.

Once you figure out what to carry, the next question is what to carry it in. I suggest you avoid traditional metal toolboxes; they're heavy, and can dent or scratch your airplane (or your toe). I like plastic toolboxes from Stack-On (available at Lowe's, Wal-Mart, and Amazon.com). I carry two of these in my airplane: one for tools, and the other for parts and supplies. Another good choice is a "fishmouth" canvas toolbag (available from Klein Tools, among other sources).

Parts and supplies

I bought my first airplane in 1968, a brand-new Cessna 182, and traveled in it a lot, including making a transcontinental trip at least once a year. The Skylane proved to be a very reliable airplane with one exception: It had an old-fashioned mechanical voltage regulator that it "ate" on a regular basis. After the third time I spent the night on a hard airport bench, I decided to buy a spare voltage regulator and carry it in the baggage compartment. Guess what? The airplane never ate another regulator for the rest of the time I owned it. I'm convinced that when you carry spare parts with you in the airplane, they radiate some sort of protective force field that keeps their brethren healthy.

My Skylane had a belt-driven alternator, so I also carried a spare alternator belt, which doesn't weigh much or consume much space. I figured it might come in handy someday, but my airplane seemed to know I was carrying a spare, and so I wound up never needing it.

The Cessna 310 I've been flying for 30 years uses solid-state regulators that never seem to give any trouble, so I don't carry a spare. But my 310 likes to eat vacuum pumps, usually when I'm far from home and dealing with IMC. Because my airplane has deice boots, it uses the big, expensive 400-series vacuum pumps maintenance shops almost never keep in stock. So I carry a spare pump and the special wrench needed to change the pump under battlefield conditions. I also carry a couple of spark plugs; landing, taxi, nav, and post-light lamps; and some fuses.

I carry some strategic supplies: tie-wraps, duct tape, a tube of RTV sealant, a vial of super glue, a length of .032-inch safety wire, some 20-gauge hookup wire, and a crimp terminal kit. Also a few chemicals: spray lubricant, contact cleaner, windshield cleaner, and Simple Green. (There's not much that can go wrong with an airplane that

can't be fixed at least temporarily using tie wraps, duct tape, safety wire, and locking pliers.)

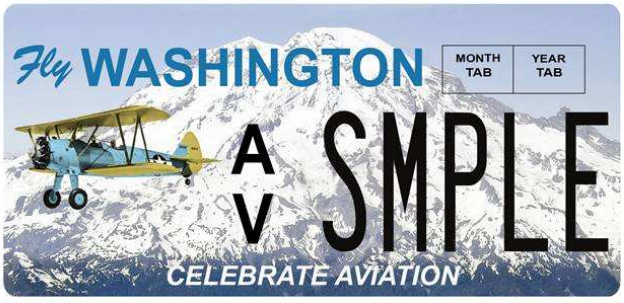
Mini-tool kit for the cockpit

I also carry a mini-tool kit in my airplane glovebox for in-flight use, and it has saved the day for me on numerous occasions. It includes a Leatherman multitool, a miniature locking plier, a jeweler's screwdriver, some Allen wrenches (for removing/installing tray-mounted avionics and tightening knob setscrews), a small adjustable wrench, a folding pocket knife, a small LED flashlight—and, of course, a supply of tie wraps and duct tape. You probably don't want to carry as much "stuff" in your airplane as I do in mine, but you should think about what you do want to carry. You just might thank me next time you find yourself stuck in the middle of nowhere on a Friday night.

Mike Busch is an A&P/IA

Washington Aviation Specialty License Plate now available

The new Washington Aviation Specialty License Plate is available for purchase beginning July 23, 2017.



Purchases may be made online by visiting http://www.dol.wa.gov/vehicleregistration/specialdesign.html or by visiting your local vehicle licensing office.

FAQ's

How much will it cost to purchase a plate?

- Initial cost: $40 for the actual plate + annual tab fees and other specialty license plate production fees
- Renewals: $30 for the renewal of the plate + annual tab fees and other specialty license plate production fees

You can find out the total cost by visiting: http://www.dol.wa.gov/vehicleregistration/specialdesign.html or by contacting your local vehicle licensing office.

What does the money from this plate purchase support?

$28 from each plate purchase will support aviation-specific initiatives such as:

- Airport infrastructure improvements to support statewide disaster response and recovery operations (examples: wildland fires, earthquake, landslide response).
- Economic development opportunities to enhance public access to airports, such as informational kiosks.
- Statewide aviation infrastructure-related awareness programs that promote public participation at airports.

I just renewed my tabs; can I still purchase the Washington Aviation Specialty License Plate?

Yes, typically, you should be able to transfer your registration to the new plate and be charged only for the special plate and processing costs. It is always a good idea to check with your local vehicle licensing office to make sure there aren't any individual/local circumstances that would change this process.

Can I buy an aviation plate as a gift for someone else?

No, not unless you and the recipient are both registered owners of the vehicle. When the plate is available, WSDOT Aviation will offer a Gift

Envelope on the WSDOT Aviation website that can be downloaded, printed and folded to hold enough money for your loved one to be able to purchase a specialty license plate.

For more information regarding the cost of a Washington Aviation License Plate please visit: http://www.dol.wa.gov/vehicleregistration/specialdesign.html or contact your local vehicle licensing office.

Can I personalize my plate?

Yes, for an additional fee, you can use up to seven characters for a personalized plate. Visit http://www.dol.wa.gov/vehicleregistration/sppersonalized.html to learn more about personalized plates and to see which character combinations are available.

Does any money from the personalization fee support aviation?

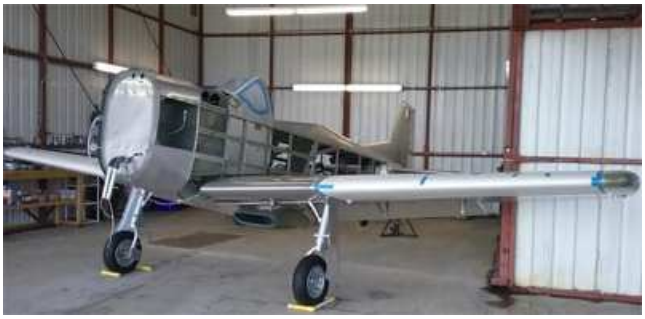
No, the personalization fee goes toward Washington Department of Fish and Wildlife conservation programs.

If you have any questions regarding the Washington Aviation License Plate, please contact Nisha Marvel, WSDOT Aviation Communications Consultant at MarvelN@wsdot.wa.gov.

Available from our Members

Aircraft hangars for sale at the Port Angeles Airport. Newer, well built. Now just $31,000 each. Call for brochure or more information. Alan Barnard, Windermere 360-461-0175

Titan Mustang Kit #162. 70% complete; basically fully assembled up to the firewall. Avionics not installed. Aluminum fuel tanks installed, vice plastic factory tanks. Can be delivered locally without taking off outer wing panels. Log and photos provided. $49,000. Gordon Tubesing 386-569-6524.



EAA 430 member Mel Rudin is parting out his Velocity, and offers the following components. Contact Mel at rudin@olypen.com or 360-461-1691 for more info:

Avionics (all with trays)

Bendix-King	
KX 155 with glideslope KI 209	$2500
KY 97A Comm	$1500
KT 76C Xponder	$500
PS Engineering audio panel	
PMA 6000 with Marker & Intercom	$750
Approach interconnect IFR/HUB	$325
Approach 18" cables for all of above	$300
Total Assembly	$5875

UMA Instruments Electric 2 1/4 " dia.

Airspeed 40-200 kts	$200
Altimeter 0-10,000 pt scale in/hg VFR only	$150
Manifold pressure 5-35 in/with sender	$125
RPM with sender and tang adapter	$200

Other

Dynon EFIS 10A internal battery and external remote compass	$1250
Lighting dimmer solid state 2 circuits with pots & knobs	$75
Electro luminescent light strips (two) 1.5" x 18" with power inverter	$150
Air/oil separator – RMJ-AERO for Lycoming	$125
Engine mount Lyc/I/O360 for Velocity/Cozy	$500
Usher gasolator- with Curtis valve	$40

Weldon boost pump B81z0-J 4.5 psi	$400
Plane Power Voltage regulator R1224	$90
B & C alternator L-40 with mount bracket	$200
Starter relay	$5
Battery relays (2)	$15 ea.
Odessy Battery PC680 (2)	$60 ea.
Odessy Battery box (holds 2)	$25
Whelen strobe power supply (comet)	$200
Whelen strobe/position lights A600 PG/PR shielded, cables included	$250 ea.
Positech oil cooler - 10 row (2)	$150 ea.
Pitot AN5813-1 24v heated, used on twin Cessna with 9" mast & nose adapter	$750
Ameri-King 12v to 24v converter 551-9	$100
Headsets (4)	$50 ea.
2A shoulder harness "Y" (2)	$30 ea.
3A lap belts, use with 2A (4)	$30 ea.
Diagonal shoulder harness (2)	$15 ea.

MORE TO COME.....

EAA Chapter 430 Membership Meeting Minutes

Date: June 24, 2017
Call to Order @ 1000 Location: W28 # 10

- Pledge Allegiance:
- Introduction of Guests.
  - Peter Morton (speaker)
  - Dave Bennett
  - Andrew Ausherman
  - Aaron Simpson
  - Mike Friend President of EAA 406 @ PWT
    - (meetings on the 4th Wednesday at 1900)
  - Russ Sides (Vancouver WA and past local member)
- Approved Minutes as published.
- Reports:
  - Treasurer: Harry Cook (report will be on the members only web)
  - Membership: Bob Hicks 88 paid members
  - Scholarship: Dave Miller nothing to report
  - Young Eagles: John Meyer Upcoming events:
    - August 12th W28 1000-1400
    - September 16th W28 1000-1400
  - Raffle Manager: Need someone to take this position.
  - Tech Advisor Dan Masys / Jim Cone none
- Project Reports: (members open forum)
- Comments from the Membership:
  - Congratulation to Bud Davies on getting his license.

Close of the business meeting @ 1030
Break for coffee and cookies.

Social Meeting and Presentation:

Program introduction by Paul Kuntz of Peter Morton. Peter's presentation was on the 757/767 common cockpit and what it took to get it done. Very interesting and innovative presentation. Thank you Peter.

Picnic / pot-luck followed and everyone got lots to eat. Always a good time. If you missed it we will be doing it again in July. Mark your calendars and plan to attend.

Needed:

- Activity coordinator, Paul Kuntz is moving to other activities. Thank you Paul and Mary for all your work in providing such interesting programs.
    - This role is very important for the chapter. This is a key to the meetings and our growing membership.
- Raffle chair to run the 50/50. This is fun and very easy. Step up and take this on.
- Coffee wrangler. Handle the coffee needs for the meetings.
    - Pick up coffee
    - Return the containers
- (if we don't get volunteers these activities will be eliminated)

Respectfully submitted,
Ken Brown

Note: General Membership meeting minutes are now included in the monthly Newsletter. Minutes of the monthly Board meeting are also available to chapter members via login at the *Members only* page of the chapter website: http://www.eaa430.org

If you are a chapter member and do not yet have a login to the Members page, you can register with your email address to create a login at the website.