



EAA 430 Flyer



Experimental Aircraft Association Chapter 430

Serving Sequim, Port Angeles and the Northern Olympic Peninsula.

A Little Hangar Flying: Hats, Jackets and Landings



This month update will be somewhat short as I am busy with getting honey bees to clients that are as excited as a 6-year-old on their first flight. Tons of

questions and so happy and excited you get excited also.

First, I would like to get about 25 orders for hats. They will be embroidered local here in Sequim by one of our members, with maybe an RV and another airplane of some type and the local chapter name on the hat.

Red and blue hats are planned and we will need to get pre-orders to make it work. The hats will be 20.00. The proceeds going to the college fund or what ever the club would like. We could also put the same logo on a Jacket. Sure need a good jacket here in Sequim. It's seems maybe the summer also, the way this year is going weather wise.

This is the time of year many are getting back into flying on these occasional good days that are becoming more linked up. Take good care to check everything on the airplane and more. Wash the dust off you and the airplane. I just cleaned an airplane that has sat for 12 years.

More to go on that. We are inspecting it really well and doing more than just the yearly annual. I must say it's really dirty. It's like a time capsule from 12 years ago. Charts, flight logs, fuel, etc. Just left the airplane like a gold rush town. Everything just as it was parked 12 years ago.

These spring weather fronts move thru the area fast and the winds come up and its never down the runway when you get to the landing area. Think for a minute and if you have to go to another runway and sit out the weather for a few hours, it will change. Then proceed on.

Now is the time of year to get out and do lots of landings at several different airports in the area. One thing I always notice is when I come back into my home airport I make better landings. Why? Because all the visual ques are there. Where to turn base, final, get the airplane slowed down where to be on down wind, final over the threshold all make for a better arrival /landing.

Please don't settle for an OK approach to landing. Make a 100% effort to do your best every time you take-off and land. On the way to the new airport or one I haven't been to in a while I always review frequencies, pattern entry, pattern altitudes, etc. Which is the preferred runway also. I look around for smoke or wind on the water to see which way other pilots might be landing. It doesn't always work out but it sure helps. Remember because the wind is out of the east at one place close doesn't mean it out of the east 20 miles away. Remember if you chose to land straight in downwind, as one famous Reeve aviator said: that's no time to dilly dally around on getting the airplane on the runway at the

approach end. Not mid field. It's easier on the breaks getting it stopped on the remaining runway if the wheels are on the ground at the approach end not the mid field section. If you do miss judge, then its time to go around and start over. It's OK to do that.

So many pilots are in the LAND the airplane mode they forget they can and should go around. I have done it, on floats and in the 747. Mostly those go arounds involved another airplane on the runway or in the landing zone when on floats.

Weather is changing fast these days and its better to be on the ground wishing you were in the air than in the air wishing you were on the ground. Pull over before its gets bad.

I again hauled a load of honey bees up to the San Juan islands. Sure was fun to get out and see the beautiful San Juan's. I went to Decatur Shores Grass Runway, then up to East Sound, Then to Friday Harbor and over to Lopez and back to Sequim. On the way over I climbed to 6000 feet. And the same on the way back. I don't like landing in the water, unless on floats. Even then I didn't fly low over the ocean crossings.

Saw one guy at Friday Harbor commuting to work on Kenmore. Ha, he was from Alaska and an Alaska Airlines Pilot. We talked about hauling bees and we knew many of the same other pilots. Sure was a fun day. Of course the landings were great because I don't want to mess up with 600,000 bees onboard.

Getting reading to go to McMinnville this morning for some Queen bees that need to be replaced. It's a good day all around. 25 kts on the nose all the way down, and rain. Oh and I tanked up at Port Townsend. The airplane and myself. 3.2 hours and when I got to Boeing on the way back I tanked up again. Then went to Sequim and later went over to Friday Harbor and over to East Sound. That's some traveling.

Let's get the orders for the hats and jackets going this next meeting. I'll have some prices and ideas of the way it will look. I hope.

Fly safe everyone and be careful.

Mike Radford

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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
Monthly Chapter meeting April 29, 2017 10:00 a.m. Hangar 10 Sequim Valley airport	Program on National Air Races by Mike Lavelle (rescheduled from March meeting).
Saturday May 20, 2017 10:00 am – 2:00 pm	First 2017 Young Eagle Rally, Sequim Valley airport
Saturday, May 27, 2017 10:00 am Hangar 10 Sequim Valley airport	Chapter meeting and potluck luncheon. Program: “All for a Spark: from Magnetos to Electronic Ignition” by EAA 430 tech counselor Dan Masys.
Saturday June 10, 2017 0830-1500	Chapter Fly-Out to Skagit/Bayview (KBVS) and Heritage Flight

	Museum. See February 2017 chapter meeting minutes for details.
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W28 Night Light, Revived

By Dan Masys, EAA 430 technical counselor. Adapted from April 2017 Sequim Valley Airport hangar owner’s newsletter, with additional content added.



Crouse Hinds DCB-225 rotating beacon on tower

Rotating beacons at airports have been a fixture of the aviation landscape since the 1930’s, and in those early days they were a critical nav aid for both cross country and airport approach navigation. In the 1940’s the Crouse Hinds company developed the

quintessential airport beacon called the DCB-225, which was a 36 inch beacon with a 1000 watt or higher bulb, often mounted on a 50 foot tower that still populates many airports, particularly in the wide open territories of the Great Plains. There must be a pilot somewhere who has never seen one of these, but I’ve never met that pilot. The ‘famous’ DCB-225 also had a lesser known little brother, the DCB-10, and that’s where our Sequim Valley airport story begins.



Crouse Hinds DCB-10 rotating beacon on top of the W28 maintenance hangar



1944 vintage rotating brass slip rings and contact brushes provide 110v current to W28 beacon bulb

The exact trail of ownership that led Jack Sallee to acquire the rotating beacon on top of the W28 maintenance hangar has been lost over the years, but it is definitely thoroughbred stock.

Our Crouse Hinds DCB-10 beacon was built in 1944 with a sturdy glass and steel weather enclosure, brass gears, and a small electric motor that has turned at a steady 5 revolutions per minute for more than 70 years. Aviation DCB-10's have a pair of 10 inch Fresnel lenses, one green

and one clear, with a 750 watt bulb, now halogen rather than incandescent, in between them. By FAA specs it throws a flash that is angled skyward at six degrees, visible for 20 miles in clear air.

When fitted with other color lenses their weatherproof design made DCB-10's a favorite of the US Coast Guard for smaller lighthouses, particularly along the southeast coast of Alaska. Although the DCB-10 has a spare bulb on a spring-mounted swing arm for rapid bulb switching, it still requires a human being to tend the light and make the bulb switch, so in the 1970's the Coast Guard replaced most of its lighthouse DCB-10's with automated, remotely-controlled lights.

DCB-10's also require periodic lubrication, and they slowly wear out their specialized brushes that conduct current to the rotating light through a set of brass slip rings. Newer technology lights took over the aviation market, and the Crouse Hinds company left the beacon business in the 1970's. A few specialized maintenance shops bought up the company's parts inventory, which was used up in the 1990's. So any airport with a DCB-10 beacon that needed service or parts was on its own after that.

The day the W28 beacon light went out 'for good' isn't known either, but it was already dormant in 2009 when this pilot first landed at the airport. It had succumbed to the slow but relentless wear on its slip ring brushes, so no current could get to the bulb.

Three nice things about mechanisms designed in the 1940's are that they are generally sturdy, simple, and have measurements in common



Slip ring brush for the W28 beacon

fractions of an inch. The circular slip rings on the DCB-10 have a curved bearing surface that is exactly 1-5/8th inches

in diameter, which happens to be the diameter of the holes they cut in modern granite countertops for kitchen faucets. And the brush material, which is a self-lubricating alloy of graphite and copper, just happens to be the same material used in brushes for large industrial motors.

Armed with the dimensions of one of the remaining brushes in the W28 DCB-10, and a quick search of e-Bay, Amazon and Home Depot websites, the necessary materials and tools were soon in hand. Well, relatively soon. The heavy 1 x 2 x 5 inch industrial motor brush stock costs only \$5 a bar but literally came on a slow boat from China, delivered two months after the

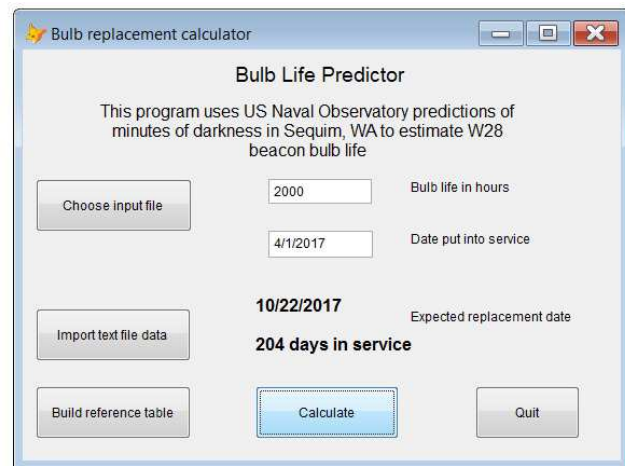
online order was received by the seller in Shanghai (for a \$1 trans-Pacific shipping charge!) After cutting the brush to size on a bandsaw, the perfect diameter curvature on the brush came by drilling a slice of the brush using a 1-5/8" carbide (granite countertop) hole saw from Home Depot, and tapping a couple of 6-32 mounting holes in the top. Voila. 1944 slip ring brush.

The airport beacon was happily recommissioned in July of 2016 and soldiered on its nightly rotating light duties through the colder-than-normal winter, with one tripped circuit breaker episode apparently caused by freezing temperatures in January. Then in March of 2017 the light went out again, this time for the simple reason the bulb had used up its design lifespan.

A new 750 watt halogen bulb was installed in the beacon on April 1. (No, really.) The bulb has a nominal 2000 hr. life, so the question is, how long will this one last, when it comes on at dusk and turns off at dawn each day? Since pilots think about daylight and night time differently and in more detail than normal folks, this turns out to be a deceptively simple question. (And if you've had enough beacon trivia at this point, please go on to the next article in this newsletter now...)

It seems sensible to think that, averaged over a year which has $365 \times 24 = 8760$ hours, there would be about 4400 hours of darkness occurring annually, and a 2000 hour bulb ought to last somewhat less than six months. Not so fast, Captain. The hours-of-daylight difference between the shortest and longest days of the year in Sequim is over 7 hours(!) and we are heading toward the summer solstice as this article is being written. So your faithful correspondent the beacon guy has done two things. The first is add a digital hour meter to the beacon so the actual time the beacon bulb is turned on gets added up. The second is downloading a file from the Naval Observatory that has the actual number of hours and minutes of darkness each day in Sequim, for

which I wrote a computer program that will accept bulb life and start date, and calculate the estimated replacement date for the bulb by adding up the minutes of darkness that accumulate from that start date forward through the year:



To give a sense of the wide swings between dark and light duration in Sequim, the program predicts that the current bulb will hit its nominal lifespan after 204 days of service, in the third week of October 2017. But the replacement put in on that date would last only 137 days due to the extra hours of darkness between October and March!

Over the coming months it will be interesting to compare the program's predictions with the actual hours of power-on data from the hour meter, to adjust for things like civil twilight and the sensitivity of the photocell dawn-to-dusk switch. Which should be fun on those scuzzy, dark days when there is no flying, and there is excess time to just think about stuff... Oh, and in the meantime if you happen to see the W28 beacon isn't working, just send an email to the beaconmeister: dmasys@uw.edu



Why Change the Oil?

From AOPA blog 2/24/2017 by Mike Busch

Continental and Lycoming tell us that we must change the oil in our engines every 50 hours or 4-6 months, whichever comes first—and that's if we have a full-flow oil filter installed. If we have only an oil screen, then the oil change interval goes down to 25 hours. Did you ever wonder why we need to change the oil so often?

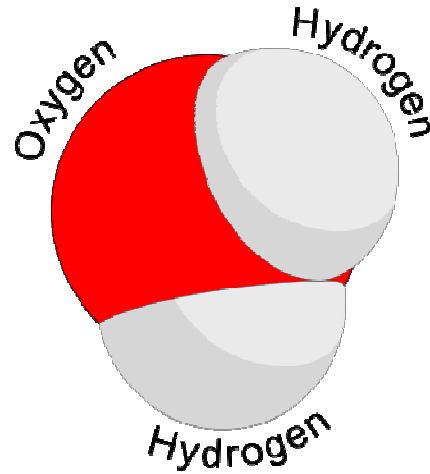


It's not because the oil breaks down in service and its lubricating qualities degrade. The fact is that conventional petroleum-based oils retain their lubricating properties for a very long time, and synthetic oils retain them nearly forever.

Consider, for example, that most automobile manufacturers now recommend a 7,500-mile oil-change interval for most cars and light trucks. That's the equivalent of 150 to 250 hours of engine operation. In fact, oil analysis studies have shown that a synthetic automotive oil like Mobil 1 or Amsoil can go 18,000 miles without appreciable degradation, and that's the equivalent of 400-600 hours.

Filth

No, the reason we change oil in our aircraft engines every 25 to 50 hours is not because it breaks down. It's because it gets contaminated after 25 to 50 hours in an aircraft engine. In fact, it gets downright filthy and nasty.



DHMO

Dihydrogen monoxide (DHMO) is a highly corrosive chemical that is produced in copious quantities during combustion, and can cause great harm to costly engine components when it blows by the piston rings and contaminates the engine oil. You may be more familiar with DHMO's common chemical formula: H₂O.

Compared with automotive engines, our piston aircraft engines permit a far greater quantity of combustion byproducts—notably carbon, sulfur, oxides of nitrogen, raw fuel, partially burned fuel, plus massive quantities of the corrosive solvent dihydrogen monoxide or DHMO (see graphic)—to leak past the piston rings and contaminate the crankcase. This yucky stuff is collectively referred to as “blow-by” and it's quite corrosive and harmful when it builds up in the oil and comes in contact with expensive bottom-end engine parts like crankshafts and camshafts and lifters and gears.

To make matters worse, avgas is heavily laced with the octane improver tetraethyl lead (TEL), which also does nasty things when it blows by the rings and gets into the crankcase. (If you're as old as I am, you may recall that back before mogas was unleaded, the recommended oil-change interval was 3,000 miles instead of 7,500 miles.)

So one of the most important reasons that we need to change the oil regularly in our

Continental and Lycomings is to get rid of these blow-by contaminants before they build up to levels that are harmful to the engine's health.

Acid

Another reason we need to change the oil regularly—arguably even more important than disposing of contaminants—is to replenish the oil's additive package, particularly its acid neutralizers. When sulfur and oxides of nitrogen mix with DHMO, they form sulfuric acid and nitric acid. If you remember these dangerous corrosives from your high school chemistry class, then you'll certainly appreciate why you definitely don't want them attacking your expensive engine parts.



To prevent such acid attack, aviation oils are blended with acid neutralizer additives. These are alkaline substances that neutralize these acids, much as we might use baking soda to neutralize battery acid. These acid neutralizers are consumed by the process of neutralizing acids, so it's imperative that we replenish them before they get used up to an extent that might jeopardize our hardware. Of course, the way we replenish them is to change the oil.

How can we tell when the acid neutralizers in the oil have been used up? It turns out that there's a laboratory test that measures the level of

unneutralized acid remaining in the oil. This is known as the "total acid number" or "TAN" test. Some oil analysis firms can perform this test on your oil samples. However, it's not routinely done as part of the normal oil analysis report, so you need to specially request a TAN test when you send in your oil sample (and be prepared to pay extra for it).

Intervals

Most owners don't bother with the hassle and expense of TAN testing, and simply change their oil at a conservative interval that's guaranteed to get the junk out and fresh additives in before anything untoward is likely to occur.



On my own airplane, what I do (and generally recommend to my clients) is to change the oil and filter every 50 hours or 4 calendar months, whichever comes first. This means that operators who fly at least 150 hours a year can go 50 hours between oil changes, but operators who fly less will use a proportionately reduced oil-change interval.

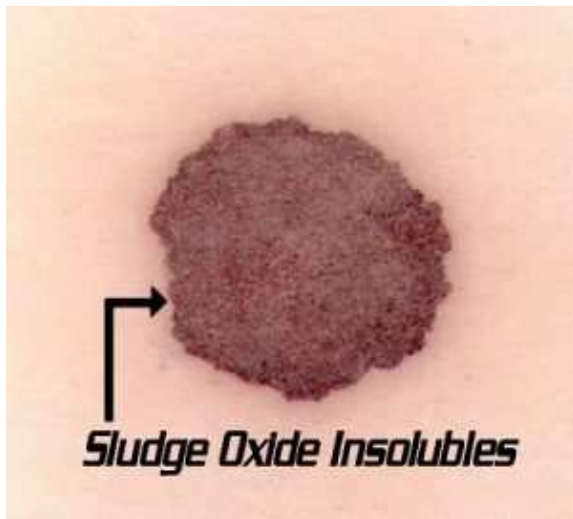
This recommendation assumes that the aircraft has a full-flow (spin-on) oil filter installed, that it operates primarily from paved runways, and that it has decent compressions and relatively low blow-by past the rings. Engines that have only an oil screen (no filter) should have the oil changed every 25 hours. Engines that operate in dirty or

dusty conditions and ones that have high oil consumption due to high blow-by should have more frequent oil changes.

My friend Ed Kollin—lubrication engineering wizard who used to head Exxon’s lubrication lab and who developed ASL CamGuard—is even more conservative. He preaches that oil should be changed no less frequently than every 30 hours, and frowns when I suggest that it’s okay to go to 50 if you fly a lot.

Insolubles

Another important indication of oil condition can be found in standard oil analysis report provided by some labs—notably the one I prefer, Blackstone Laboratories in Ft. Wayne, Indiana—is the “insolubles” test. This test is performed by placing the oil sample in a centrifuge to separate out all solids and liquids in the sample that are not oil-soluble.



Virgin oil normally contains no insolubles. The insolubles found in drained engine oil come from three sources: (1) oxidized oil that breaks down due to excessive heat; (2) contaminants from blow-by of combustion byproducts; and (3) particulate contamination caused by poor oil filtration. If your oil analysis report reveals above-normal insolubles, it might be indicative of an engine problem—high oil temperature,

excessive blow-by, inadequate filtration—and almost certainly means you should be changing your oil more frequently.

By the way, did I mention that I’m a huge fan of laboratory oil analysis? I use it religiously, recommend it strongly to all piston aircraft owners, and believe that it’s one of the most important tools we have—along with oil filter inspection and borescope inspection—for monitoring the condition of our engines and determining when maintenance is necessary.

Mike Busch

Available from our Members

Garmin color GPSmap 295

Vern Sprague has a new GPS Garmin 295 for sale. Value \$360. Phone 360-683-7571
dollyvern@olypen.com

Sky Raider Kit for sale

Mel Rudin writes:

Bill Hancock was one of the early members of 430. He was building the Sky Raider for his personal fun plane. Unfortunately he died before he was able to complete the project. His widow, Sylvia, would like to get the use of her garage back; consequently she would like to find a good home for the project. The Sky Raider is a single place, high wing, tail dragger that looks like a small Piper Cub. The fuselage is steel tube with aluminum longerons. The wing has two aluminum spars with wood ribs.



All framing construction is complete; and all fabric and finishing components are stored with the kit. What remains to be completed is the cabin floor, instrument panel, selection of instruments and an engine with accessories. The engine that is currently with the kit is a Rotax 277. It is out of production. The best option is a Rotax 477 which is in production and was a recommended option for the kit.

I will be glad to take any interested parties over to see the project. Sylvia doesn't want a crowd so we'll do it in 2s and 3s. Contact Mel Rudin at rudin@olypen.com

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

Large T Hangar for rent at Diamond Point Airport. \$200.00/month.
George Llewellyn 360-477-8180



Lancair 235, O-235 LCE2 engine, aircraft 275 hrs since new & SMOH, hangared in Port Angeles. All electric instruments; no vacuum pump. Wooden cruise prop. A good airplane that cruises at 156 kts on 6.5 gallons per hour. 32 gallon fuel. Contact Bill Bartlett for more information at wtbartlett@msn.com

EAA Chapter 430 Membership Meeting Minutes

Date: March 25, 2017 Location: W28 # 10 1006

- The Pledge of Allegiance
- Introduction of Guests
- Minutes as published in the newsletter stand approved as written.
- Business meeting:
 - Correspondence to the chapter this month – None
 - Announced: Financial balances/reports and the board minutes are available in the members section on the web site. Default password for your initial login is ResetPassword (case sensitive)
 - Announcement: Board meetings are open to all members and held on the 2nd Friday of the month. Next meeting is 4/14 at 0900 at Mariners Café
 - Comments by membership chair Bob Hicks requesting EAA numbers for the members. Also only National EAA members are eligible for chapter family membership.
 - Scholarship: nothing to report.
 - Young Eagle Announcements: John Meyer (absent) Reminder for everyone that the first YE event will be May 20 for pilots and ground crews. If you have not completed your “Youth Protection Policy & Program”, please do so before arriving to help with Young Eagles. Certificates will be checked if you have not already presented it to John Meyers.
 - Tech Advisor Dan Masys / Jim Cone – nothing to report
- Project Reports: (members open forum) or interesting recap of a recent trip somewhere?

- Next General meeting will be April 29th 1000 here in Hangar #10
- End of business meeting.
- Social Meeting and Presentation: Paul Kuntz introduced John Fredrickson, a volunteer at the Boeing Archives, who talked about North American Aviation during WWII.
- Adjourned at 1130

Respectfully submitted / Ken Brown, Secretary

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.


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