The Crab Pot

MARYLAND NINETY-NINES WOMEN PILOTS CHAPTER

December Crab Pot Features

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Chapter Newsletter Input

- Send us your latest flying destinations, restaurant recommendations, or any new ratings/endorsements!

Welcome New Members

- Chrissi Dieling
- Christine Pulliam

Upcoming Chapter Events

- Next Chapter Meeting January 9th 10:00 A.M.

https://us02web.zoom.us/j/9739925140?pwd=NDlEekNXVXlncjJCcHROZDNPS2UxUT09

Meeting ID: 973 992 5140
Passcode: Cessna150

Upcoming Regional Events

Check the 99s Calendar Website for Upcoming Events:

- https://www.ninety-nines.org/calendar.htm

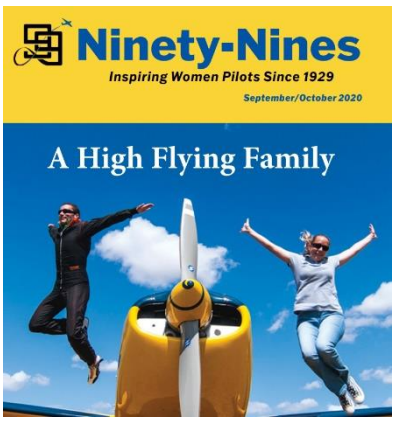
Scholarship Opportunity

https://generalaviationnews.com/2020/11/10/musicians-flying-a-winning-combination/

Publications

https://www.ninety-nines.org/pdf/newsmagazine/20200910.pdf

https://www.faa.gov/news/safety_briefing/2020/media/NovDec2020.pdf



Monthly Feature – Aircraft Performance Monitoring

Submitted by General Aviation Joint Steering Committee (GAJSC) Loss of Control (LOC) Work Group

The General Aviation Steering Committee (GAJSC) System/Component Failure work group contends that unreasonable expectations with respect to aircraft performance have contributed to fatal GA accidents. The GAJSC also feel that flight data monitoring can help to forecast system/component problems before they reach the point of failure.

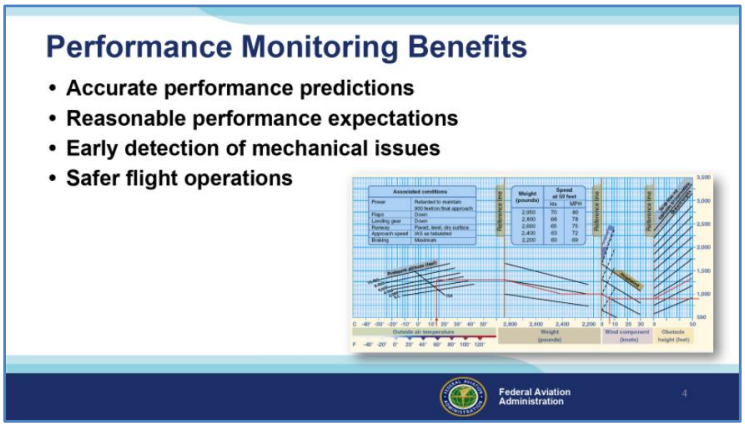
Aircraft Performance Monitoring

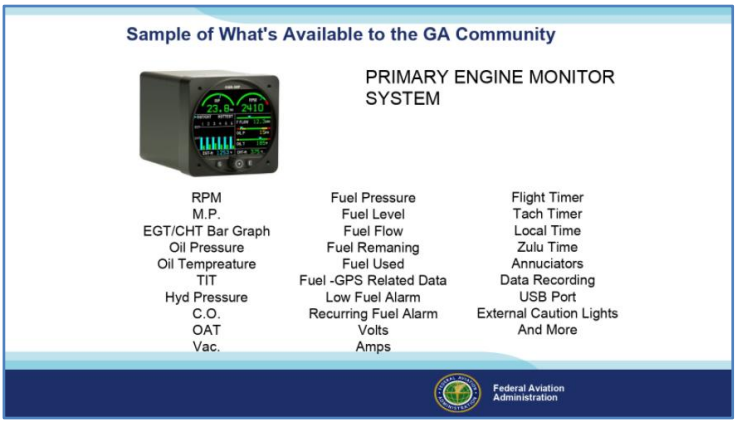
- Pilots and mechanics should work together to ensure the aircraft is operated and maintained properly. Pilots are encouraged to take an active role in maintenance; reviewing inspection results and discussing Airworthiness Directives and Service Bulletins.

- Flight data monitoring has been around since before the jet age and modern airplanes make extensive use of the technology, to monitor engine performance. But some data monitoring operations involve no automation at all, as Flight engineers used to handle the monitoring and record keeping. GA pilots can do much the same thing by tracking engine power, fuel flow, oil temperature and pressure. Panel mounted GPS systems and many hand-held units are already capable of recording position, heading, speed, and altitude.

- The Pilots Operating Handbook will help you to predict your aircrafts' performance but only by monitoring your personal performance can you know what to expect. Comparing your performance with the POH will enable you to develop accurate performance predictions and reasonable performance expectations. Changes in aircraft performance can presage developing mechanical issues, taken together that adds up to safer flight operations.

- While it is true that most GA aircraft do not have dedicated automatic flight data recording devices now; we will be able to enjoy the benefits of equipage in the future. In the meantime, it is often surprising to see what we already have. Manufacturers are already offering self-contained flight data and visual data recorders for GA airplanes and helicopters.





References:

Pilots Handbook of Aeronautical Knowledge (FAA-H-8083-25B), Chapter 7 Aircraft Systems.
https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak/media/09_phak_ch7.pdf

PLANE SENSE General Aviation Information FAA-H-8083-19A
http://www.faa.gov/regulations_policies/handbooks_manuals/aviation/media/faa-h-8083-19a.pdf

Winter Flying Tips

Be kind to your engine

Cold-weather powerplant tips

One obvious difference you may notice with a cold-weather engine preflight is the addition of metal plates in the openings of the cowling. These block airflow, helping to keep the engine warm in very low temperatures.

Your engine will love you if you make sure it is properly preheated. Lycoming recommends preheating any time the ambient temperature is less than 10 degrees. Check with your flight school for how to safely preheat. If a heated hangar isn't available, a portable propane heater (right) works great. Some owners with unheated hangars use a light bulb inside the cowling and a blanket over the top of the cowl. It works surprisingly well.

Whatever you use, try to make sure the engine starts on the first try. If you aren't able to start on the first try, the spark plugs may freeze over, requiring a lengthy preheat. Not to mention the battery will run down much faster in cold weather. The hard-cranking workhorse that goes for a long time in the summer may give up much faster in the winter. —Ian J. Twombly

BRAKING ACTION

When slick isn't cool

Assessing contaminated runways

Taxiways and runways covered in snow, ice, and slush don't automatically mean a no-go—otherwise pilots who live up North wouldn't fly for months. But it would certainly help your flight planning if there were some way to tell just how much accumulation is on those surfaces.

There are a couple of sources. Airport management can assess runway conditions and report those, based on a set of numerical criteria. These range from 6 to 0: 6 (dry); 5 (frost or wet runway; one-eighth inch or less of slush, dry or wet snow); 4 (negative 15 degrees C and colder with the presence of compacted snow); 3 (slippery when wet, dry or wet snow of any depth over compacted snow; greater than one-eighth inch of dry or wet snow; and the presence of compacted snow when the outside air temperature is warmer than negative 15 degrees C); 2 (greater than one-eighth of an inch of water or slush); 1 (ice); and 0 (wet ice, slush over ice, water over compacted snow; dry or wet snow over ice).

BRAKING ACTION

Pilots can report braking action, and air traffic control will pass that information along (listen for it on ATIS/AWOS broadcasts, or you can request it from ATC directly). Braking action is defined as good (normal); good to medium (braking deceleration or directional control is between good and medium); medium (braking deceleration is noticeably reduced for the wheel braking effort applied, or directional control is noticeably reduced); medium to poor (braking deceleration or directional control is between medium and poor); poor (braking deceleration or directional control is significantly reduced; and nil (braking deceleration or direction control is uncertain). Definitions for runway conditions and braking action can be found in Chapters 4-3-8 and 4-3-9 of the Aeronautical Information Manual.

Even in this automated age, it's also worth phoning your airport and asking someone about the condition of taxiways and runways. —*Jill W. Tallman*

Practical cold-weather flying tips

- Dress for an off-airport landing.
- Preheat the engine.
- Check for cracks in the muffler and heating shroud during preflight. Monitor the carbon monoxide detector and be alert for symptoms of carbon monoxide poisoning, such as headache or drowsiness.
- Check notams for braking action reports and call ahead if necessary to find out airport conditions.
- Don't fly until frost or ice has been completely removed from the airplane.
- Avoid overflying remote areas.

AOPA
your freedom to fly

https://www.aopa.org/news-and-media/all-news/2018/november/flight-training-magazine/out-in-the-cold

Things I learned when overhauling an engine *Submitted by Sophia Dengo*

I bought my 1973 Piper Cherokee 180 in March of 2019, and have since put over 150 hours on it. The first year of ownership was both some of the most joy I've had, and some of the most stress. The Cherokee has been good to me, but it's old, and has showed its age in interesting ways. First I replaced the attitude indicator, then the transponder went south, and then :scary music: metal in the oil.

When I bought the Cherokee, the engine was already at 1650 hours since major overhaul (SMOH). It's a standard Lycoming O-360-A4A, with a time between overhaul (TBO) of 2000 hours — so it was not entirely surprising when metal started showing up in my filter and oil analyses.

Annual inspection was in March. The A&P who did the work noted the metal, followed Lycoming procedures for determining next steps, and eventually returned the airplane to service while telling me to change the oil more frequently and keep an eye on the filter. The next oil change was ok. The one following that, not so much, so I started asking around for advice. I started to think about the engine in terms of diagnosing a problem, versus open-heart surgery on the airplane — but I also got recommendations for A&Ps who could do the work, and started looking for estimates.

Everyone warned me — oh, overhaul is the worst thing. I hope you have money set aside for overhaul. Avoid it if you can. And of course, when the engine started making metal, I heard a similar refrain. It was like something tragic had happened. "Oh noooooooo but you just got the airplane!" "Ugh, sorry to hear that, that's rough." And while I appreciate the sympathy, and wish I hadn't needed an overhaul a year and change into ownership, the reality is that major maintenance and repair is all but inevitable. I had squirreled the funds aside, knowing how I planned to fly my Cherokee and that I'd be coming face-to-face with overhaul at some point.

It's worth noting here that I am pretty risk-averse. The engine was already making me nervous and somewhat reluctant to fly. I definitely didn't want to go do pattern work at the height of summer on it (though who are we kidding, that's no fun even with a healthy engine). While I was being continuously reassured that catastrophic failure was not imminent, I didn't really want to test the theory.

The hardest part of this whole process was figuring out that overhaul was truly necessary, and then being patient while the work was completed. I was fine with the idea, but I definitely didn't want to do it if it wasn't necessary yet.

Here's what I knew when I started calling mechanics for advice:

- The engine was last overhauled in 1993
- It was over 1850 hours SMOH
- "Full power" was no longer quite as "full" as it used to be
- I had more than a quarter-teaspoon of metal in the oil filter at annual, then again two oil changes later
- Oil analysis was showing a trend of increasing iron, aluminum, and nickel in the oil, with iron well over the lab's "green" limits

I went first to Larry Donaldson at Chesapeake Aviation (KANP), hoping he would be able to help me diagnose the issue. Larry very patiently listened to my data points, but as soon as I was done, he was unequivocal in his recommendation to overhaul. That engine is 25 years old, he said. You can try and fix the issue now, but you'll be back at this decision point in a year.

Larry, it turns out, doesn't do engine overhauls. He sent me to Steve, at Aero Services of Winchester (formerly, I think, Aero Engines). Steve also very patiently listened to my data points and arrived at the same conclusion as Larry. By this point, between Larry, Steve, and a few friends, I had four different, experienced mechanics independently arriving at the conclusion that the engine needed an overhaul. Steve recommended Valley Aircraft Services in nearby Mount Jackson, VA, to actually do the overhaul. After getting the quote and noting the schedule, I committed to overhaul and crossed my fingers that I'd made the right decision.

The logistics of the thing turned out to be pretty simple. In early October, my CFI kindly ferried the airplane to Winchester, where Steve and his crew uninstalled the engine. They work closely with Valley Aircraft, so they handled the transfer of the engine to the crew performing the overhaul. I didn't have a great idea of how long this was going to take, nor did I get routine status updates during the process (though to be fair, I didn't ask for them). I found out that the engine had been removed from the airplane when I called the shop to tack on some avionics work. I found out that the engine had been

reinstalled when FlightAware let me know my tail number was flying. And I found out that the overhaul was complete when Steve called me to ask when I wanted to pick the airplane up!

The total elapsed time between when the Cherokee got dropped off, and I picked it up again, was less than six weeks. Picking it up was in itself an adventure: newly-overhauled engines have to be flown hard in order to break them in properly. The shop had done the critical first hour while test flying, but it needed another nine hours or so of full-power, full-rich time in the sky to complete the break-in. Here's where I learned things that hadn't shown up in the very, very many articles about engine overhaul on the Internet!

For example, carburetors can be set lean or rich by default in the factory. Mine was set very lean, and will be tweaked richer at the first oil change, because I've been seeing absolutely bananas engine temperatures in climb. If I don't manage the climb carefully, it would be trivial to exceed 500 degrees. Even in cruise, the engine runs hotter than what I was trained to think of as "normal," hovering around 400 degrees.

After the first couple of flights, I got nervous about the high temps and called the shop for advice. According to the guys who rebuilt the engine and are guaranteeing the work for the first 200 hours, the high temps I'm seeing are to be expected, and will continue to come down as the engine fully breaks in. Between the factory-lean carburetor, and the shiny new very-well-sealed cylinders, the baseline "normal" temperature for carbureted piston engines is expected to be higher than those at the end of their functional lives.

All in all, for something that was always characterized to me as a A Very Bad Day, overhauling my engine — while expensive, and time-consuming — turned out much better than I anticipated. The airplane was down for less time than for annual this year. It flies like a dream now; there's less vibration and noise, and of course there's much more power! While I hope I don't have to go through this again any time soon, I'm happy with the way things went, and that I now have an engine to last me another decade or so. Bonus — I also now have my old camshaft, which was indeed corroded and misshapen, which I'm going to turn into a lamp for my office!

https://www.facebook.com/pages/category/Aerospace-Company/Valley-Aircraft-Services-1159432914228607/

https://www.aopa.org/destinations/business/10265

December Chapter Meeting Recap

Virtual Attendees: Anita Ammon, Carol Christian, Meaghan Cohen, Sophia Dengo, Joy Halcott, Leslie Hoffmeister, Alice Li, Christine Pulliam, Cathy Steele, Donna Suwall, and Jane Toskes.

- **Fascinating brief** by *new member* Christine Pulliam on the James Webb Space Telescope. Thank you so much for putting this together for us Christine!
- **Member Chats** The rest of the meeting we chit-chatted with one-another and Leslie Hoffmeister and Joy Halcott gave the group details on their lives/children.
- **We wish everyone a Merry Christmas & Happy New Year!**