

EAA CHAPTER 1410 HIGH RIVER NEWSLETTER



www.eaahighriver.org

Chapter Once Again Takes Flight

THIS ISSUE

"Bent Prop's & Blow Pots"
- Another in Paul's Aviation history series.

- **Test Flying: Engine Break-In**
- **Briefing from HAC Mtg.**
- **June 7, Agenda Preview**

NEXT MEETING

VIMtg. (see Page 9)
Business Mtg. for Father's Day Fly In . Guest Speaker, Ed Wischmeyer, See Page 6

Ed's particular topic has not been confirmed, but come with your questions. This will be a great time to share in Ed's knowledge of almost every aspect of the aircraft industry.

June 7th (1900h. Dueck Hangar, Snack; at 1830)



Ram Falls, from the ground



In early May, 2006 many of our chapter members joined the flight to Billings, Montana. Needless to say, we all had a great time, but some of us learned a great deal too. A new challenge for some of us was the cross-border flight and learning to meet the requirements of customs and immigration on both sides of the border. And so we had the best of both worlds; enjoying our friends and our hobby and expanding our knowledge of flight.

If you enjoyed "Billings" you will want to join us for a Chapter flight to Ram Falls on June 10. Not a long flight, but the challenge here is a bit of mountain flying and a high-altitude airport.

Ralph Inkster, our intrepid Vice President writes on our website:

This is a great opportunity to hone your mountain flying, high density airport, and grass strip operational skills. Not to mention your social skills!

(Good call Ralph, we could all use that)

Ralph made a scouting trip and took the picture above as well as several others on our website. Be sure to go there and check them out and then join us and enjoy your flight!

I Want to Build My Own Aircraft

Test Flying My Homebuilt—Engine Break-in

I've now completed my first flight in my new homebuilt. I've worked through all issues and corrected or addressed all snags, and I'm now ready to continue the test flight phase of 25 hours as mandated by Transport Canada.

This brings up an entirely new concern. In most cases the pilot (and owner) of a new homebuilt will be faced with a new untested airframe, together with a new or rebuilt engine that requires proper engine break-in. These two are not mutually compatible. The need is to slowly explore the flight envelope for the aircraft while at the same time ensuring proper engine break-in by operating the engine under loaded conditions.

I've borrowed heavily from an instructional booklet entitled; Engine Break-in Instructions and Oil Management, published by: Engine Components, Inc., 9503 Middlex, San Antonio, TX. 78217-5994, www.eci2fly.com. for this paper. Obtain a copy for your own reference.

Aeroplane owners want the engine to perform and give a long and satisfactory service life.

When an engine fails to give satisfactory service, it is frequently due to: unseated piston rings due to improper break-in, uneven cooling due to improper baffling, poor fuel distribution, incorrect timing, damaged or perforated piston heads caused by detonation or pre-ignition, piston scuffing or seizing usually caused by overheating or unseated rings that allow blow-by to displace the oil film between piston and cylinder bore, bearing and crankshaft wear caused by under-lubrication or dirt, excessive piston and cylinder wear caused by dirt, ineffective air filtering or excessively rich or lean air-fuel mixture.



Run-in vs. Break-in:

Most engine overhaul shops will typically run-in opposed engines for one to two hours before release for installation. This is not the same as engine break-in. The objective for the run-in is to:

- Prove the engine is producing the rated horsepower.
- Check and correct for any oil, fuel, or induction leaks.
- Check operation of the fuel system.
- Adjust the engine operating oil pressure.
- Provide the initial stage of the break-in.

Only after this run-in and after the engine is installed in the actual airframe with appropriate baffling, etc. can the break-in take place. In some installations that I have been involved with, even this run-in by the engine overhaul shop has not been accomplished. This makes the initial start-up and first operating hours critical to engine health and life.

So how do we proceed with a new or overhauled engine in an untested airframe?

1. Pressure oil the engine before the first start-up after installing the engine in the aeroplane. There are many systems

available and a homemade improvisation is certainly applicable. Unfortunately, pressure oiling the engine does not lubricate cylinders, pistons and rings. To do this, remove the spark plugs and oil the cylinder heads with a low viscosity oil. Consider an oil spray to reach the upper portions of a horizontal cylinder as-

(Continued on page 3)

Test Flying My Homebuilt—Engine Break-in

(Continued from page 2)

sembly. Fill the oil filter with oil before start-up. All work should be performed so as not to introduce any dirt or contamination into the engine.

2. Ensure proper fuel-air mixture to the engine. On our RV-9A at start-up we had one cylinder head temperature far above all others, indicating a lean fuel-air mixture. The culprit was a leak in the induction hose connection to that cylinder.
3. Check out the ignition system and timing. Magneto timing should be set and verified to engine manufacturer's specifications. Make sure the spark plugs have the correct heat range and gap as specified.
4. Check all fuel and oil lines for leaks. Check hard lines for proper support to prevent fatigue. Insure heat protection for fuel and oil lines as required.
5. Use only a mineral-based oil for break-in purposes. Continue using mineral oil until oil usage is minimal, indicating complete break-in of the engine. This can take from 25 to 50 hours.
6. For the initial start-up, run the engine at a fast idle, (850 to 1000 RPM). Limit the engine high RPM operation to 3 to 4 minutes at 1800. Shut down and inspect for oil leaks. During ground runs, do not exceed cylinder head temperatures (CHT) of 400 F., or oil temperature of 200 F.



Pre-lubing engine Before first Start-up

Now for Flight!

In order to break-in your new or newly overhauled engine, you need to observe two basic variables:

- Keep operating temperatures to minimum recommended.
- Keep the manifold pressure high, to force the seating of the rings to the cylinder walls.

1. Start the engine, run up normally, taxi and take-off immediately. (Minimize ground time.) Reduce manifold pressure in your climb and

reduce engine speed to maximum-continuous, (top of the green). Reduce power to 75%. Do not cycle or feather the propeller.

2. On take-off, use minimum power to reach 40 mph IAS before applying required take-off power.

3. Maintain a shallow angle of climb (ie. high airspeed) in order to keep the cylinder head temperatures as low as possible. Check your

specific engine for appropriate maximum CH temperatures.

4. Level off at desired altitude and maintain 75% power for at least 30 minutes. The engine should then be operated at various power settings and engine parameters observed until at least 45 minutes of flight time have elapsed. All power changes should be made very gradually, especially power reductions. During the first 50 hours, the piston rings will seat better if higher power (and manifold pressure) is maintained under controlled CH and oil temperatures.

(Continued on page 4)

Test Flying My Homebuilt—Engine Break-in

(Continued from page 3)

5. Keep flying weight to a minimum as you progress through these first critical hours. This will help in keeping the CHT low during climb-out. Depending on the type of cylinder bore you have, (Steel/Cast Iron, Chrome, or Nickel Composite), break-in will commence immediately and oil consumption should start to reduce within a few hours. Note: Porous chrome-plated cylinder bores have more critical cooling requirements than the other cylinder-bore surfaces.
6. If during any of the test flights a persistent high CHT or oil temperature is noted, a precautionary landing and inspection should be made to determine the cause.
7. Ground operations and continuous climb at low airspeed should be minimized until the engine has accumulated at least 25 hours of operating time. Cylinder overheating can cause bore-glazing and/or piston-scuffing at any time, but cylinder assemblies are the most susceptible during the first 25 to 50 hours of operation. If glazing and/or scuffing become severe, the cylinder will need to be removed and the glaze mechanically removed, the piston and rings replaced.

A Note About Oil:

For the break-in of an engine, use only mineral based oils. You can use a multi-viscosity oil in higher-usage aeroplanes, and a single viscosity oil works well in lesser-flown aircraft. Synthetic or semi-synthetic oils are not recommended. Do not use any anti-scuffing additives during break-in.

How about Fuel?

Use only 100LL for engine break-in for an engine that was designed, tested and certified on 100LL or 80/87. Under no circumstances should unleaded auto gas (mogas) be used when breaking in an engine.

Years ago, I rented a C180 from a friend for a flight from the Yukon to Airventure, Oshkosh. This aircraft had accumulated about 40 hours since hav-

ing a complete engine overhaul by a popular repair shop, that included an hour of run-in time. My buddy was disappointed with the engine's abnormally high use of oil; over a quart per hour. He had been using a popular synthetic multi-grade oil right from the get-go. Before leaving for Oshkosh, I drained the oil, replaced the filter and the oil with a single-viscosity mineral oil. During the flight to Oshkosh, we flew at an appropriate altitude, with the RPM in the appropriate range, and maximum manifold pressure, always maintaining a careful monitoring of engine temperatures. Within about 10 hours, the oil consumption had reduced, and by the time I returned to the Yukon, oil consumption was down to a quart every 5 or 6 hours.

Summary:

- Do not use synthetic oil.
- Check oil/fuel levels.
- Pre-lube engine prior to starting.
- Start engine, run up normally, taxi and take off.
- Do not cycle propeller during flight.
- Climb out at a low angle of attack. This will prevent cylinder heads from overheating.
- Level off at 2 to 3 thousand feet above ground level.
- Keep power at top of green arc on the tachometer and manifold pressure gauge, or 75% power (whichever is higher) for ½ hour.

Having completed a first flight, and having gained a degree of confidence and comfort with the aircraft, for the next few hours I will concentrate on flying the aircraft, and becoming more familiar with it. But my additional focus will be on working the engine to these above parameters to achieve a proper break-in, and ensuring the lasting performance and service of my engine.

Jack Dueck, EACC, EAAHAC

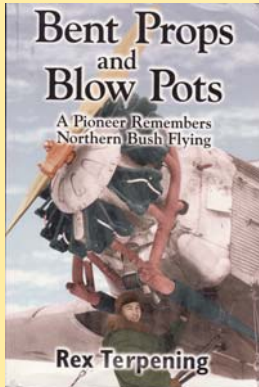
Ram Falls.
Fly here with
our Chapter,
June 10.



Ram Falls

Aviation History: "Bent Props and Blow Pots"

- Paul Gregory



I am fascinated with our early Canadian aviation pioneers. These pilots risked their lives relying on primitive technology, pursuing a passion of doing something they loved in extreme conditions. So when I come across a first-hand account of what it was

like to work and fly in the Canadian north in the early years, I have to read it. But imagine my surprise at opening one such book only to find out it isn't about a pilot at all.

The book is [Bent Props and Blow Pots: A Pioneer Remembers Northern Bush Flying](#) by Rex Terpening (Harbour Publishing, 2003). This is a personal account not from a pilot's perspective but from an "air engineer". Back in those days, pilots couldn't fly without having an engineer along to prepare, nurse, and pamper the plane from one base to the next (airports came along many years later as did radios) – in fact the pilot bet his life on the skills of his engineer.

Rex, the author, was one of

those "air engineers." He diligently kept a personal log and was an avid photographer throughout his career that started in 1930. As a result his stories are filled with vivid recollections of many adventures. He recounts many close calls – not surprising as they flew over unmapped country into un-forecasted weather hundreds of miles from any living person. Their bases were rivers, lakes, ponds and any open stretch of water despite the season. Landing on ice covered rivers was fraught with dangers and often these heavy aircraft would go through the ice. All repairs were improvised onsite where the aircraft lay using whatever they could salvage or use. If you think

homebuilding is challenging – try doing it in the outside in the wilderness!



Cutting away the fabric covering of the AAO's fuselage to extract the cargo and bags of mail. A view to the east with the Clearwater River beyond.

Even his descriptions of "mundane" daily routines paint a vivid picture of what kind of people these pioneers were like. Imagine waking at pre-dawn often in -40° weather (which is the same in Celsius

and Fahrenheit!) to preheat the drained engine oil to the right temperature and then quickly fill the engine; which, if it didn't start meant having to drain the oil and start the process all over again. These and other small details are fascinating to someone like myself

(Continued on page 6)



Aviation History: "Bent Props and Blow Pots"

(Continued from page 5)

who has grown up expecting engines to spark into life with nothing more than a twist of the wrist.

Rex does recount how some of his peers and colleagues were less fortunate and were lost in the cause of opening the Canadian North. These air engineers faced the same risks and dangers their more famous pilot counterparts did, without the historical recognition. Fortunately Rex's book does much to correct this misperception.

What is a blow pot you ask? Well it was a smelly gasoline burning heater used to heat the engine block on the aircraft under the cover of a tent. It required constant attention due its risk of fire, despite its fumes choking the engineer to tears in such a confined space.

One small note: I was surprised to read in the opening acknowledgements a reference to one of our esteemed Chapter 1410 members: Clarke Seaborn! Clarke tells me that he knows Rex and that he is as interesting a fellow to talk to as is his book is to read.



Who writes *Kitplane's* featured article almost every month??

Answer: That author is Ed Wischmeyer of Prescott, Arizona.

Ed, a former member of the *EAA Homebuilt Aircraft Council*, and the current Chair of the *AirVenture*



The author in front of the snow-block windbreak which was built and rebuilt to protect CF-ARI from at Paulatuk's blowing snow and 35-mile-an-hour winds.



Ed's Air Cam, obtained from a Drug Bust!

Awards Committee, has agreed to address our Chapter on June 7. There are many other credentials that we could cite, but *Kitplanes'* readers will attest to Ed's unique cache of knowledge and experience.

President's Comments

From Headquarters: Un Bon Mot

I spent May 9 through 12 at EAA headquarters in Oshkosh, attending the spring EAA Homebuilt Aircraft Council meeting with other members of the council and EAA staff.

The spring meeting inevitably involves planning for the upcoming AirVenture, held this year from July 23 to 29. But in addition, we met with a number of EAA staff for ongoing issues. We met with Tom Poberezny, President, who spoke to us about EAA's strategic plans and current issues; we met with Senior Vice President Bob Warner; with Charlie Becker, Technical Services; Ron Wagner, LSA and Regional Airshows; Earl Lawrence, Governmental Affairs; and David Hipschman, Director of EAA Publications. We heard from Brenda Anderson of Chapter Activities, and from Jennifer Bork, who among other duties keeps track of Technical Counselor and Flight Advisor activities. The really neat thing about serving on a council for EAA is the opportunity to get to know these folks on a very close, working basis.

Thursday evening, May 10, we were invited out to the new Oshkosh Skypark, the brainchild of Bob Warner and Noel Marshall. It is situated about 6 miles due west of the city of Oshkosh. At present this Skypark consists of an open grass field with an east/west runway somewhat defined by obvious aircraft tire tracks. Three

aircraft appeared, two Aeronca Sedans, (one from Green Bay and the other flown by HG Frautschy, (Vintage Aircraft Assoc. Executive Director,) and one Clipped-wing Piper Cub, flown by Adam Smith EAA Museum Curator). Dinner consisted of copious amounts of KFC from the back of Bob and Noel's pickup. We met with the locals and all were given the opportunity of aircraft rides over the beautiful countryside, green and lush, on this perfect spring evening.



Saturday morning, before flying out of Milwaukee, three of us visited the Racine EAA Chapter 838, the only EAA Chapter with its own museum. This museum houses the beautiful replica Sikorski S-38 used by Sam Johnson to recreate his father's flight through parts



(Continued on page 8)

President's Comments

From Headquarters & Young Eagles: Continued

(Continued from page 7)

of South America searching for the Carnauba tree used in his famous Johnson Wax product. Logon to [Http://www.EAA838.org](http://www.EAA838.org). Sounds like just another boring week doesn't it?



But the highlight of this trip was the personal invitation of EAA's founder, Paul Poberezny, to our council to see his private collection of memorabilia of a seven-decades love affair with all things aviation.



Paul is gifting this enormous collection of artifacts to EAA where it will hopefully be displayed in a special location in the EAA World Class Museum. Make sure that you view these items and

reminisce on the legacy that this man and his family has and continues to, provide to us in our passion of flight.

Paul serves the EAA family as Chairman; still reads all the Chapter Newsletters; and has now begun writing to the various Chapters, sharing his thoughts and encouragement. What an honour it is to know this man and to enjoy visiting with him.

Now to Current Issues; Father's Day Fly-in and our EAA Chapter's Young Eagles Day Flights:

As reported previously, there are some changes involved, due to EAA's re-evaluation of liability concerns. Please use the following checklist to ensure that you are current and eligible to fly our Young Eagles:

Pilot:

- Current Medical
 - Self regulatory physical condition
 - Recency Requirements: (TC AIM LRA 3.9)
 - 5 year requirement
 - 2 year Recency training
 - 6 months: Six take-off and landings within the last six months
- Member of EAA (EAA Chapter 1410 members have an additional \$1,000,000 liability coverage.)

Aircraft:

- Current annual maintenance inspection logged
- POH and check-lists on board
- All required documents on board:
 - C of R
 - C of A
 - Insurance Card

(Continued on page 9)

President's Comments
From Headquarters & Young Eagles: Continued

(Continued from page 8)

- Current out-of-phase maintenance tasks:
 - Compass Card
 - ELT certified annually
 - ELT Battery – checked annually
 - Fire Extinguisher – chemical contents refreshed every 6 months and pressure vessel hydrostatically tested every 12 years
 - Prop inspection within allowed time

- period
- Altimeter – tested and calibrated together with an encoding device every two years

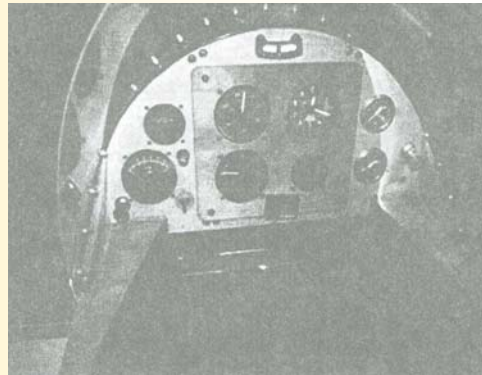
Stay current! Stay legal! Stay safe! Above all, with the general public and kids are around aircraft, let's remain especially vigilant!

Your President

The "For Sale" Bin

Can I interest anyone in our Chapter, or maybe the Chapter itself in a sweet little aircraft? This is a Druine D.31 Turbulent, open Cockpit, 1600 cc 55 HP Volkswagen engine, fixed pitch, Aylmar-Delmuth prop. Meticulous workmanship, Fabric covered wood structure. Built in 1981 and registered in the USA as amateur-built. Total time aircraft and engine – 339 hours, Total time since Overhaul – 198 hours. Span – 21' – 7", Length – 17' – 10". Empty weight – 455 lbs., and max. weight – 700 lbs. No damage history.

good aileron control at low speeds. Cross-wind handling is good.



I've seen this aircraft and it stands up well to its description. I have specs and literature on it. And here's the best part: Sale price is \$6500.00 US. And with the Canadian dollar around .92 US, this is not bad at all for a flying, fun, aeroplane. I would be interested in any kind of a partnership, just to get a chance to fly this little gem across the USA and up to High River or surrounds.

Performance: takeoff distance – 200 ft., rate of climb - >500 FPM, Cruise – 90 MPH at 3000 ft. ASL. Stall speed – 45 MPH. Slotted wings provide

Any interest? I may just have to do this myself!

Jack Dueck

Chapter Life: We Need You Here



The Wright Stuff: Born to "Ramble"



I've been Building Aircraft since I was . . . 3



'Now, all of you head this way to the Bathroom and report back to me.



Sometimes, people are hard to find when they have a new airplane.



Hey Girls! We Really Need You Here

Chapter Memberships are \$40 for singles and \$50 for families with a membership in EAA. See "Paul" or any chapter volunteer.

| Role | Volunteer | Phone | E-mail |
|------------------------|---------------------------------|------------------------------|--|
| Jack Dueck | President | 403-815-9384 | cgyrv@yahoo.com |
| Ralph Inkster | Vice President | 403-282-8065 | RVInkster@shaw.ca |
| Treasurer | Paul Gregory | 403-271-5330 | EAAHighRiver@shaw.ca |
| Secretary/Young Eagles | Sylvia Kasper Allan Logan | 403-245-8669 | Tony.Kasper@shaw.ca |
| Community Outreach | Eileen Bahlsen Rob Griesdale | 403-646-2994 403-395-3739 | eileeng@platinum.ca rob@platinum.ca |
| Newsletter | Jean Dueck | 403-652-7333 | Jean.Dueck@gmail.com |
| Webmaster | Paul Gregory | 403-271-5330 | EAAHighRiver@shaw.ca |
| Membership | Paul Gregory | 403-271-5330 | EAAHighRiver@shaw.ca |
| Librarian/Historian | Jack Reid | 4032-238-7658 | JReid@cbe.ab.ca |