



# Chapter Waypoints

Volume IV: Issue 4  
April 2009

## FROM THE FLIGHT DECK

This past month we were treated with a couple of guests at our meeting. Our first guest was Doug Eaglesham, Commanding Officer of 187 Foothills Royal Canadian Air Cadets Squadron. This squadron was started in High River during WWII and has recently returned to the High River Airport. As Doug explained, being based at an airport and being close to airplanes has made it more real for the air cadets. They have a greater exposure to aviation at the airport than in a school gymnasium. These are young adults who are interested in aviation and are taking the initiative to learn more, and become more involved in aviation. Joining Air Cadets is a great way for our future generation to be introduced to aviation.

One of our past executive mentioned that he was the first person in Alberta to get his glider's licence through air cadets. Now,

a couple of years (or more) later, he is still active and shares his passion in aviation.

Our second guest, Ken Fowler, wowed the chapter with his passion and creativity for avia-



*Ken in his Rochet at night. Photos by: Michael C. Burns*

tion. Ken is an accomplished air show pilot, performing in one of the many homebuilt aircraft that he has built. Ken is one of a handful of air-show performers permitted to perform his show at night. He does this with fireworks mounted to his wings, spewing sparks all over the night sky. This year, just to raise the bar, his air show part-

ner has decided to join him so that they do formation aerobatics, at night, with showers of sparks!! Pretty incredible. As Ken stated, 'a lot of pilots while tinkering on their planes would think "wouldn't it be cool if..."', air show pilots take that thought, and put it into action.' Despite all the unique circumstances and all the amazing experiences that Ken described, I was truly impressed at his kid's involvement in aviation. The one story that resonated with me was hearing how his wife came into the shop while Ken and his 9 year old son were riveting. She came in to remind them that it was time to go to bed. Ken's son asked if they could just stay up a little longer to finish a few more rivets. Ken's wife pointed out that it was 3 AM! Now there's a kid with aviation passion.

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### CHAPTER NOTAMS

- Next chapter meeting April 2, 2009 at the Dueck hanger (see [www.caahighriver.org](http://www.caahighriver.org) for directions)
- Chapter meeting—feature speaker Tony Burton on sail planes
- 2009 Membership fees are due. See the last page for details.

# SOAR AT OUR UPCOMING MEETING

Make sure you attend this coming chapter meeting April 2nd. We are pleased that Tony Burton will be our feature speaker.

Tony Burton is a retired CF (RCAF) officer living in Claresholm since 1980. He has long been active in many sporting and organizational aspects of soaring. He soloed in 1968 and has about 3500 hours in 46 glider types including 480 hours of instructing time. Tony is particularly active in cross-country and contest flying and in making record attempts – it keeps skills sharp and the mind focused, he says. He has recorded about 87,000 km of cross-country flights (three over 700 km) that include many competitions



Tony Burton with his sail plane

and 21 national records to date. While serving as a CF Exchange Officer in the USA in the 70s, he built a glider in which much of the above flying was

done.

In the late-1980s he was the organizer and project pilot for the joint Canada/US "Chinook Project", in which an instrumented 20m sailplane (Alcor) was flown to gather high altitude atmospheric data. Several of these flights were made from High River.

Organizationally, he has run two national competitions, wrote a manual on contest organization, was the Executive Director of the Alberta Soaring Council for 18 years, has been the editor of the national magazine Free Flight since 1982, and is a member of the international committee that writes the rules governing the sport.

Come and join us at our meeting April 2!

## FROM THE FLIGHT DECK (CONTINUED FROM PAGE 1)

This year, let's share aviation with some kids. Let's ignite that spark of passion in them like someone may have done with us.

Allan Logan, our Young Eagle coordinator, has challenged the chapter to log 100 Young Eagle Flights. What a great way to celebrate 100 years of Flight in Canada. Our chapter has the opportunity to work with the Air Cadets from 187 Squadron and let some of them experience aviation firsthand.

Our Chapter will be organizing Young Eagles flights at the Father's Day Open House. I encourage you to attend. Outside of these opportunities, any EAA member who is current, can log a Young Eagles flight.

Check on our website, there are over a dozen chapter members who have taken up a Young Eagle. We have logged 184 Young Eagle flights to date. Let's get at

least 10 new pilots on the log and get at least 100 new Young Eagle flights. Share the flight experience; you may actually enjoy it more than your passenger.

*Jeff Seaborn  
President  
EAA Chapter 1410*



## LAST MONTHS WEBSITE POLL

Every month on the Chapter website ([www.eaahighriver.org](http://www.eaahighriver.org)) we post a trivia question. This month dealt with a Canadian aircraft theme.

The question asked which of a following list of aircraft was NOT DESIGNED AND BUILT in Canada. The answer is the Canadair CL-13 Sabre. The Canadair Sabre was a fighter jet built by Canadair under licence from California-based North American Aviation Inc.

The December issue of EAA Bits and Pieces introduced Vintage Wings "Hawk One," the restored F-86 Sabre that will highlight air shows and performances across Canada this centennial year of powered flight. Read an update by Don MacNeil at [http://www.eaa.org/bitsandpieces/articles/2009-02\\_hawkone.asp](http://www.eaa.org/bitsandpieces/articles/2009-02_hawkone.asp)

Website Poll Stats		
Which of the following aircraft was not designed and built in Canada?		
Answer	%	#
de Havilland Beaver	0	0
Noorduyn Norseman	13	2
Avro Canada CF-100 Canuck	0	0
Canadair CL-13 SABRE	40	6
All were 100% Canadian aircraft	46	7
<b>Total Answers : 15</b>		

## LAST MEETING'S MINUTES

### Minutes from meeting March 5, 2009

Meeting called to order at 7:10pm. Minutes from February accepted by Allan Logan, seconded by Phil Wadsworth.

**Guests:** The chapter welcomed Brad, Greg, and Doug to the meeting.

**President:** Jeff Seaborn had Mark help him move the 7a out to the airport.

**Vice President:** Lars Oyno has a preliminary schedule for upcoming speakers: April – gliding with Tony Burton; May – High River Airport history; June – scratch building & design with Robert Friedman; July – British Aerospace presentation with Lorin Dueck. Still looking for tech round table ideas. Robert suggested structures.

**Treasurer:** Marvin Fenrich put out a reminder for 2009 membership dues. Account balances are \$2646.68 for chapter and \$577.84 for Sport Air. Paul will be assisting with transfers. Marvin requested that everyone update name badge info.

**Secretary:** Andrew Crocker reported on the Leadership academy that he attended the past weekend with Jack Dueck. Five days were spent learning about the culture and passion of EAA. A full report will be submitted to the newsletter.

**Air Cadets:** Doug Eaglesham, commanding officer for 187 Foot-hills Royal Canadian Air Cadets, explained the reason for the

move to High River, for the opportunity to be around airplanes. Flying and gliding are a top priority for the squadron. He is currently looking for pilots to take air cadets flying. The squadron is currently building a new facility at the airport and would be interested in sharing facilities.

**Canada Centennial:** Jean & Jack Dueck and Scott Church went to Halifax on Friday before the big flight. Two to three hundred people turned out for the event. They spoke to the pilot and watched the Silver Dart make 10 passes. Initially there were some issues getting airborne due to changes in the airfoil and a nose wheel problem. A sabre also made a couple of passes.

**Young Eagles:** Allan Logan is looking for an ace (five flights) or a double ace from Young Eagle pilots. Pilots must be Transport Canada current.

**Newsletter:** Paul Gregory is requesting Tech articles and project updates from members.

**New Business:** A cross-border fly-out is being planned for the 4th annual Sandpoint Idaho Fly-In. It's a two-hour flight and has ½ dozen interested. Dates to be determined.

The Aerobatic Club will be hosting a Transport Canada presentation on Tuesday at 7:30pm at the Calgary Flying Club.

Meeting adjourned 7:55pm accepted by Lance Brown, seconded by Ralph Inkster.

## OSHKOSH LEADERSHIP ACADEMY VISIT

In February, I had the opportunity to attend the Leadership Academy in Oshkosh, Wisconsin. I met up with Jack in Chicago and we drove to Oshkosh. That evening we went to the Sonex Aircraft Factory where I met the owner, John Monnett, and helped Charlie Becker from EAA with his Sonex project. I spent all day Thursday in the museum, virtually by myself, looking at the 120 aircraft throughout the museum. It was nice to see the Van's RV3 prototype as I am building an RV 7a. Lunch was spent with more EAA headquarters personnel, and then I went to see Joe Norris' Waco in his personal hanger.

Friday evening consisted of a meet and greet of all the attendees and the hosts of the academy. Paul Poberezny joined us for dinner. The newly formed Canadian council was also in town meeting for the first time. The leadership course started on Saturday morning. We covered topics such as culture, what's new, chapters, resources, recruitment, retention, fundraising, public relations, Young Eagles, and insurance.



After lunch, we went to Paul Poberezny's house and went through a "time capsule" for the past 56 years of his life. All of these artifacts are going to be donated to the museum for the new Founders' Wing. It was a humbling experience to listen to the man that started it all.

That evening, the group went for an after-hours tour with Adam Smith and we were allowed to hop the barriers. I got to sit in a De Havilland Mosquito. I have loved the P51d Mustang ever since I was a kid and I finally got to touch one. The most fascinating part of the tour was finding out that if Adam could save only one aircraft from the whole museum, it would be Burt Rutan's Long EZ, as his contributions to aviation are on the same scale as the Wright Brothers.

Sunday morning we had a wrap-up of loose ends and made the journey back home. It was amazing to spend a weekend immersed in this culture, with people who share my passion for aviation.

This experience fueled my inspiration to continue my dream of building my own airplane, and I hope that I can inspire passion for aviation in others.

Andrew Crocker, Secretary

# SHOWING OFF THE PITTS

BY AL MACDONALD

Everyone wants a great wall hangar of their airplane right? Here's a couple of photos of my old Pitts S-1D C-GRJS (C-gorgeous)

Every aircraft has their good and bad sides, just like people, so I put some research into "how best to show off the characteristics of the Pitts".

An internet search quickly showed that the belly of the Pitts is not overly appealing (hummm.... just like many people).

As well, a straight side shot often allows one of the wings to disappear in the photo. Two sets of wings double the chance of part of the airplane to be in shadow. And finally, a dynamite good background always helps the foreground look good.

So..... I dreamed up a shot of the Pitts in front of the Livingston Range, just to the west of me. Early in the year would still leave the peaks capped in snow, and early in the day would have the sun low in the sky, so nice warm colours and not the harsh shadows of mid day. Smooth air was helpful too.

That figured out, I called on my friend Wayne Pedersen and his Musketeer to fly in formation with me as I flew from west of Nanton, down south past Claresholm. I had introduced Wayne to



Al's favourite picture taken of his Pitts biplane

some formation flying before, when we flew his Musketeer and his wife's new-to-her Acrosport from Sarnia ON to Claresholm, so we were up to speed there.

Another friend, Mitch Berreth ran my camera from the right seat of the Musketeer. On the first run I got Wayne to back off while I rolled over, and once stable he sneaked back into the position he wanted. I lasted 5 minutes until my head started pounding.

We headed back to Nanton and I lasted 7 minutes

on the second run. Lots of shots taken but this was my favourite and worthy of wall space in my home.

The second shot was also taken by Mitch, while I tried to fly in formation with his Dad's Beaver ultralight, near Granum AB. Try as I might, I could not fly slow enough to stay with them, so the exercise turned into a number of slow fly-bys. This was my favourite shot of the day.

I love taking photos and I've got lots of other shots of my Eagle to share as well.



"Brown side up, blue side down..."

**Don't forget to send in your photos to [eaahighriver@shaw.ca](mailto:eaahighriver@shaw.ca)**

# POTLUCK SNAPS

PHOTOS BY RON DUECK

On February 7, a crowd of 50 people swarmed into Jean and Jack's hanger. It was time for our annual potluck dinner with guests and spouses.

There was a variety of dishes. No two dishes were the same and everything was eaten. It was a real nice event and a wonderful spread of food.

Our speaker for the evening was Soren Christiansen sharing photos and stories from a recent adventure trip up to Alaska.



Soren and his wife Beth logged 34 hours in their C185 flying into gravel strips, backwood ditches, and the occasional paved runway.

There were some incredible photos and some pretty interesting experiences. Hearing their stories opens the mind to where you can fly to. You never know, there might be a large group from High River flying to Alaska in the next year or two.

I can't wait for next year's potluck gala!

The 2009 Annual Chapter 1410 Potluck



# From The Tech Desk: Sizing the Induction Inlet in Aircraft Applications

This is an article written by Chris Zavatson who spoke to the chapter last year about improving the speed of his Lancair through modifying the engine induction system. He writes, "during my presentation last fall there was one question that I didn't answer to my satisfaction. The topic wasn't really cooling related, but involved some of the same aerodynamic issues. I wrote the following to rectify the situation." Here is the article he kindly submitted to us.

Before we get into the details of inlet sizing, we should briefly discuss some terms that will be needed. The following is quick word about static and dynamic pressure. In aeronautical work we often deal with different forms of pressure. Pilots are exposed to static and dynamic pressure when the pitot-static system is explained.

One additional concept needs to be introduced: Total Pressure. Total pressure is the sum of static and dynamic pressure ( $P_t = P_s + P_d$ ). It is really just a measure of the total energy of the air.

An important characteristic to understand is that static and dynamic pressure can be traded back and forth. The sum of the two will always equal the same quantity – total pressure. What this means is that air that was once stationary and is then accelerated will now contain some dynamic pressure. As a consequence, its static pressure will have dropped. The total of the two will still remain the same. If the air is again slowed to a stop, dynamic pressure will go back to zero and static pressure will rise back to its starting point.

Sitting stationary on the ground, total pressure is the same as static pressure. As we accelerate an aircraft through the air we are increasing the total pressure that is available to us by adding dynamic pressure. It is the dynamic content that we see in our airspeed indicator ( $P_d = P_t - P_s$ ). We convert this dynamic pressure to static pressure to do useful work for us in our cooling and induction systems. By slowing the air we decrease its dynamic content and increase the static portion.

## Sizing Induction System Inlets

Sizing induction system inlets differs from the sizing of cooling system inlets due to the nature of what lies downstream. The cooling system will vary flow rate as a function of airspeed. Flow is a balance between the motive force provided by the aircraft moving through the air and the system resistance curve. The induction system, on the other hand, has a constant volume pump on the downstream end – the engine. This changes the situation in several ways. First, the volume flow rate is set by the speed and displacement of the engine. Losses in the induction

system will not show up as reduced flow, but rather as reduced pressure or density in the engine's intake manifold.

The engine manufacturers' publish performance charts assume that the engine is stationary on the ground. They are labeled 'zero ram'. One will note that the manifold pressure measured is lower than atmospheric. This is due in part to losses in the induction system.

Additionally, a reduction is seen because the air in the induction system is moving. This reduces static pressure, which is the reading you see on a manifold pressure gauge. The combination can amount to one or two in-Hg. Now, on to sizing of the inlet.

In a flying aircraft, especially the higher speed variety, we have a source of energy that can be utilized to counteract the losses inherent in the induction system.

Here is the general approach. Take the desired engine speed and the engine displacement to determine the volume of air pulled in. Don't forget to divide by two for four-stroke engines. Now this volume flow rate is divided by the aircraft velocity. The result is the area that will produce zero differential between the inlet flow velocity and aircraft velocity. This size will regain some of the induction system losses since the air is not being accelerated through the inlet by the engine. Rather, the air is being fed in as fast as the engine can use

it. There will still be losses in the induction system, but now the static pressure measured at the inlet will have returned to atmospheric. More can be gained by increasing the area further. If the inlet is made still larger then not all air approaching the inlet at aircraft speed can pass through the engine. The flow will slow down and static pressure will rise. One could turn the exact sizing into a real science project. Make the inlet too large and you end up adding external flow disturbances and drag to the air frame, so there are definitely diminishing returns. A middle-of-the-road approach is easiest.

## An Example

Let's walk through an example. Take an O360 at 2500 rpm.  $360 \text{ in}^3 \times 2,500 \text{ rpm} / 60 \text{ rev/sec} = 7,500 \text{ in}^3/\text{sec}$ . At 100 kts, or 2024 in/s, you end up with an area of  $3.7 \text{ in}^2$  or 2.2



Figure 1, Induction Air Inlet

*From the Tech Desk: Engine Leaning (Continued from previous page)*

in diameter. If we increase this to an even 3 in diameter the inlet flow rate slows to 1061 in/s or 52 kts. The difference between these two speeds will show up as ram pressure in the form of  $\frac{1}{2} \times \text{density} \times \text{vel}^2$ . At high speed this can amount to quite a gain. For example, At 200 kts, with a 3 inch diameter inlet, the differential in the inlet comes to 148 kts or 1.0 in-Hg. This translates to 1.9 in-Hg above the zero ram condition found in the engine performance charts.

As with any pressurized system, sealing is vitally important. Anything less than a positive seal will leak. By positive I generally mean clamped or bolted. Even small pressures create large

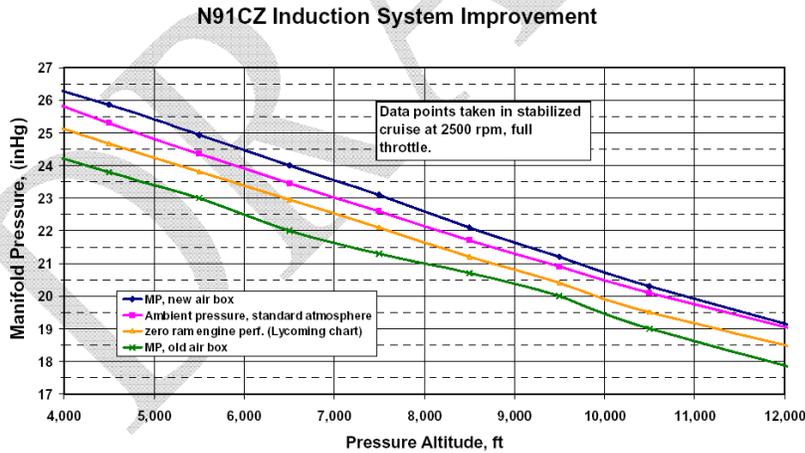


Figure 2, Induction System Improvement. The effect of capturing dynamic pressure and reducing the pressure drop across the air filter

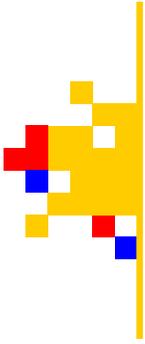
Manifold pressure is observed to be greater than ambient pressure. The increased manifold pressure resulted in a 10 kts increase in airspeed at higher altitudes. An intelligently sized inlet can provide a nice boost in aircraft performance.

forces when distributed over an area. This will move and distort parts and seals. What seals on the ground may no longer seal when flying. Unfortunately a small leak can negate all the effects of ram pressure recovery. In fact, in this case, it can pressurize the lower cowling which is undesirable from a cooling perspective.

Figure 2 shows the capturing of ram pressure combined with an improvement in filter design.

**Pictures of Jeff's RV-7 Move to the Hanger!**





# Chapter Waypoints

E A A C H A P T E R 1 4 1 0 H I G H  
R I V E R , A L B E R T A , C A N A D A

Make sure you visit the website for more info!  
[www.eahighriver.org](http://www.eahighriver.org)

We are an enthusiastic group of like-minded individuals from various backgrounds who share a passion for recreational aviation in Southern Alberta. Whether you have a casual interest in aviation, you are an active pilot, or you are an avid homebuilder of aircraft, we offer the chance to meet others who combine fun with learning. We meet to learn from informative speakers, participate in various social activities, and are active in the flying community. Come by and visit!

*Chapter Memberships are \$40 for singles and \$50 for families with a membership in EAA.  
Contact Marv or any of the following chapter volunteers*

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### How to join...

- ✓ Attend our next chapter meeting. Ask for anyone and they will be pleased to help. All the required forms and such will be available for you to fill out.
- ✓ You must be a current member of EAA International so please have your EAA membership number - if you aren't a member you can join EAA at the meeting.
- ✓ Contact us by email, or post at EAA Chapter 1410, Box 5280, High River, Alberta, T1V 1M4. We can send you the forms for you to register.
- ✓ Call us. You can call Marv Fenrick (see left).
- ✓ Print, fill-out and mail or fax the form on our website to register. ([www.eahighriver.org](http://www.eahighriver.org))