



The Antenna

July 2015



This is how CARFF club member Greg McMaster spends his summers - fighting forest and wildfires flying bird-dog. He has his hands full this year.

Next Club Meeting: Wednesday, Aug 5, 2015. 7:30PM, CARFF Clubhouse

In this Issue:

AIRSHOW Readiness

July Meeting Minutes

Propeller Power Draw

CARFF Pattern Competition Report

NEXT CARFF FLYING EVENT: CARFF Airshow, Sunday July 26, CARFF Bawtinheimer Field, 1:00PM to 4:00PM

2015 Executive, Standing Committees and Contacts

CARFF EXECUTIVE

President Jon From, 403-886-5515, jon@cloud9aviation.ca

Vice Pres. Harvey Fodor, 403-347-9256, hfodor@transwest.com

Secretary Chris Warner, 403-589-0298, warner_c@hotmail.com

Treasurer Gale McCoy, 403-347-1363, rgmccoy@shaw.ca

Director Brian Davies, 403-318-4577, ve6ckc@gmail.com

Director Tony Lindhout, 403-347-8463, tslindhout@shaw.ca

Director Will Gross, 403-346-6119, ti2wgo@hotmail.com

CLUBHOUSE MANAGEMENT

TBA

FIELD AND MAINTENANCE COORDINATOR

Rob McCoy (403) 347-1363

INSTRUCTOR COORDINATORS

Will Gross 403-346-6119,
 Rob McCoy 403-347-1363, cell: 403-396-5747
 Travis Saylor 403-986-7581

AUCTION

Rob & Gale McCoy

NEWSLETTER EDITOR

Eraldo Pomare, 403-343-2072, pomare@telusplanet.net
 snail-mail: 1 MacKenzie Crescent, Red Deer, AB, T4N 0H6

WEBMASTER

Vince Mulhall, 403-755-1953, cell: 403-872-1911, vmulhall@shaw.ca

COUNTY OF RED DEER BYLAW ENFORCEMENT

403-343-6301 (Call will be forwarded to member on duty). Primary contact: Stephen Poburan
 If no answer call Bob Dixon 403-505-9030.

Fire Burning Permit: Not Required.

Field GPS Coordinates: N52° 12' 6", W113° 42' 18" (N52° 12.106', W113° 42.304')

CARFF on Facebook <https://www.facebook.com/groups/1418503868392501/>

SMOKE!

There has been a lot of smoke from the forest fire lately - it's making flying difficult for us RC pilots but read what Greg McMaster has to say about his work (see cover page photo):

"This particular shot was taken on a large wildfire in the Willmore Wilderness Park just north of Jasper National Park, Mt Robson, and near the town of Grande Cache.

The aircraft is Conair's Birdog 126, a Cessna Grand Caravan equipped with a new generation Garmin G1000 Glass Cockpit and a Military class FLIR (Forward Looking Infrared) camera.

The present conditions for flying are challenging to say the least. We have a total number of fires this year in the Province that nearly doubles the 5 year annual average. Our neighbours on all sides, BC, Yukon, NWT, Sask, and Alaska are all experiencing increased fire activity and resources are stretched thin.

Flight conditions for the most part have been okay but the last couple days we are facing grounding issues due to poor visibility and unacceptable flying conditions. Once we locate the fire using GPS, all of our separation and firebombing requires at least 1 mile flight visibility. Most of our fleet is equipped with TCAD (Traffic Collision Avoidance Device) but nothing replaces the Mark I eyeball.

Will continue to do our best but afraid Mother Nature is going to have to intervene before we start seeing any significant change to the present situation.

Hope to see you all soon,
Greg"

PROPELLER POWER DRAW

Eraldo Pomare

Ever wondered how much power it takes to spin a propeller? Ever wanted to convert a nitro or gas engined plane to electric power, or design your own plane? With some basic math or [commercial software](#), you can size and select a power system that's "in the ball-park".

How much power is required at the motor shaft to spin a propeller?

There is an excellent series of web articles by [stefanv.com](#) - here in blue text is a formula I copied from his website:

$$power = k \times rpm^3 \times diameter^4 \times pitch$$

This formula expresses the relationship between a propeller's pitch, diameter, rpm, and other characteristics (represented by fudge factor k). For an average propeller, k is about 5.3×10^{-15} if pitch and diameter are in inches, and power is in Watts.

Note: It does not matter to the propeller whether there's an electric motor, two or four stroke or even steam engine driving the prop as far as power draw is concerned.

Let's try an example: a 10 X 6 propeller spinning at 10,000 RPM, the above formula gives us:

$$\text{Shaft Power} = 5.3E-15 * 10,000^3 * 10^4 * 6$$

Keying the above into a cell in Excel gives 318 Watts - round this up to 320 Watts.

Note: If interested, you can convert Watts to horsepower by dividing by 750, so our example propeller needs an engine or motor which can develop to develop $318/750 = 0.4$ hp (approx,) There are actually 746 watts per hp. This is in the ball park of a 40 size motor.

From the table below, and knowing the power that 40 size engines are claimed to develop, it looks like the formula works reasonable well. Let's look at a range of RPM to see what shaft power is required to spin a 10 X 6 at various RPM:

Table 1-1

10 X 6 Prop	RPM	Watts	hp
	9500	273	0.36
	10000	318	0.42
	10500	368	0.49
	11000	423	0.56
	11500	484	0.64
	12000	550	0.73
	12500	621	0.83
	NOTE: hp is shown only for reference		

Using the 10 x 6 example propeller to size an electric drive system:

Our example 10X6 propeller spinning at 10,000RPM requires 320 Watts *at the shaft*. Unfortunately, electric motors and drives are not 100% efficient, so as we work back to the battery, we need to divide the shaft power requirement by the efficiency factors for the motor and the ESC. I typically assumed motors to be around 80% efficient, and ESCs to be about 90% efficient - so the combination is about 72% efficient.

So, for *Input Power* we need $320 / 0.72 = 444$ Watts (again, round up to 450 watts).

i.e. The battery has to supply 450 Watts input power to spin our 10X6 at 10,000 RPM
Now let's assume we want to use a 3S LiPo pack (11.1V nominal voltage).

Power = Volts X Amps, so re-arranging: Amps = Power / Volts

Our pack needs to deliver $450/11.1 = 40$ Amps

Note: This is quite high, so a 4S pack might have been a better choice because it would reduce the current to around thirty amps while producing the same power, but let's stay with the 3S pack for our example. Also, remember a fully charged 3S pack is 12.6V so the motor will run faster and draw more current in the first half of the flight. Our prop on a motor with Kv of 900 at 12.6V would initially spin at ~ 11,300 RPM - from the table above, it would pull around 450W at the shaft. So, the initial current at the battery would be closer to 50A. Amps cause heat, need thicker wire and heavier duty components & battery packs - so keeping amps down is a good thing (within reason). ***Heat is wasted energy!***

Our motor and ESC each need to be able to handle ~40A, but we always want to have some extra margin and also need the system to safely operate with a fully charged LiPo pack. So we would shop for motor & ESC rated at 60A or more.
Why so much margin? See the small print above.

Also, Kv is the RPM per volt for our motors, so the motor needs to have a Kv of about $10,000 / 11.1 = 900$

The final step in the process is to determine the desired battery capacity:

Ah rating required = Amps X Hours run time

Since we are used to buying batteries with mAh ratings and flying for minutes rather than hours, we need to convert the units, so the formula becomes:

$\text{mAh} = \text{Amps} \times \text{Minutes} \times 16.6$

Targeting a 5 minute flight at full throttle gives us:
 $40 \times 5 \times 16.6 = 3,300$ mAh pack

So, we're done as far as getting the basic sizing figured.
Having actual Kv, efficiency, mAh info for our motor, ESC and battery pack, would give more accurate results.

If anyone is interested, I can set up a basic Excel sheet where you enter prop info and desired RPM to try various combinations.

Better still, buy a copy of MotoCalc (<http://www.motocalc.com>). This easy to use software has a huge database of motors, ESCs and batteries. The program is set up to help you size a real system based on you plane's features (wingspan, area, weight, type, airfoil thickness, performance objectives etc.)

Another useful guide when looking to use electric power for models is to use the input power (battery volts x amps) “watts per pound” guide that’s been around on the web for some time now:

70-90 watts/lb.	Trainer and slow flying aerobatic models.
90-110 watts/lb.	Sport aerobatic and fast flying scale models.
110-130 watts/lb.	Advanced aerobatic and high speed models.
130-150 watts/lb.	Lightly loaded 3D models and ducted fans.
150-200+ watts/lb.	Unlimited performance 3D models.

EDITOR’S SOAPBOX

Eraldo Pomare

CARFF has been active so far this year: we had a gliding event a few weeks ago, Will Gross ran a One Day Pattern contest on July 11th (report in this issue). We have new pilot stations in position now - thanks to all who helped paint them & take down the old snow-fence. The field is looking great, especially given the dryness. The auction was a resounding success, and our mall show in spring was well supported by club membership. The CARFF executive is already working on indoor flying.

July 26th sees CARFF Airshow 2015. To be successful, it will need all members to come out and support. There are many jobs & tasks that need to be done on the day; please make yourself available! Jon has prepared a job list ([see next page](#)).

On Saturday July 11, I had a great afternoon flying at the Ponoka Fun Fly; great people, nice field. I need to get out to other club’s fun-fly events more often; there are several upcoming fun fly events, some advertised in this issue of “The Antenna”. BTW, I wore my new CARFF polo shirt at the Ponoka fun fly!

Thanks, Will, for running the One Day Pattern event and providing an excellent report!

Keep on flying, having fun, enjoying the club camaraderie and contributing to the club’s activities.

Eraldo

2015 Calendar of CARFF Events

Jul 26, 2015 (Sun)	AIRSHOW 2015. Organizer: Jon From
Aug 5, 2015 (Wed)	Club Meeting , 7:30 PM, CARFF Clubhouse
Sep 2, 2015 (Wed)	Club Meeting , 7:30 PM, CARFF Clubhouse
Oct 7, 2015 (Wed)	Club Meeting , 7:30 PM, CARFF Clubhouse
Nov 4, 2015 (Wed)	Club Meeting , 7:30 PM, Red Deer Flying Club
Dec 2, 2015 (Wed)	Club Meeting , 7:30 PM, CARFF Clubhouse **Election Night**
Indoor flying dates TBA	

NEXT CARFF FLYING EVENT: CARFF Airshow, Sunday July 26, CARFF Bawtinheimer Field, 1:00PM to 4:00PM

CARFF

Central Alberta Air Show 2015

VOLUNTEERS NEEDED

Gate attendants, 4 req'd.

Parking attendants, Wayne Hutmacher,
helpers, 3 req'd.

Concession, servers, 6 req'd.
cooks, 2 req'd.

Pit boss, John Ferguson.
Pit assistants, 2 req'd.

Grounds maintenance (garbages, bathrooms, and generators), 2 req'd.

Sound system, 1 req'd.

Road signs, 2 req'd.

Clean up, all members.

And most importantly,
Public relations, all members!

Please contact Jon From at 403-896-7175
for job descriptions, times, and requirements,
and what job you would like to sign up for.

Please note, we need enough volunteers for these positions so that no one will have to work through the entire show. I know we all want to watch the show, and having enough help will ensure that we all get a chance to take enjoy the show while still doing our part as club members.

CARFF GENERAL MEETING
DATE: July 8 , 2015

In attendance: Gale McCoy, Rob McCoy, John Bampffield, Harvey Fodor, Jon From. Wayne Hutmacher, Chris Warner, Jerry Becker, Ron Ditchburn, George Rehman, Will Gross, Eraldo Pomare, Dave Evans, Rey Musikov, Tony Lindhout, Gary Allison, Vince Mulhall, John Ferguson, James McDaniel, Rob Japp, Herb Curran, Mike Trevors

Call to Order: 7:45PM by Jon

Agenda:

Additions: CD System for the Airshow
Moved: Eraldo Seconded: George Carried Yes

Minutes: Moved as circulated : Dave Seconded: Vince Carried Yes

Financial Report: Bank account: \$14,158.44 GIC: \$5,436.45 Total: \$19,594.89
Move acceptance of finical report: Gale McCoy Seconded: George Carried Yes

Old Business:

1. CARFF Shirt
 - See Wayne to Pickup and pay for shirts after the meeting
2. Pilot Station
 - Completed and are all setup in the field
3. Field Maintenance Schedule
 - Posted online for all to see the 3 teams, see Rob is any questions
4. Plague is updated and hanging in the field house

New Business:

1. Carff Air Show July 26, 2015
 - Update from Jon , sponsors are down this year for this event
 - Bouncing Castel for kids is ordered
 - Food will be supplied by the club
 - Posters/gate tickets will be printed on Monday
 - Radio add will depend on Sponsors
 - All Volunteers to show and up
 - Friday/Sat will be setup with Practice on Saturday
 - Gates to open @11:00 Sunday
 - MACC Sanctioned
2. Pattern Contest July 10-11
 - Friday night and all day Saturday. everyone is welcomed
3. CD for the sound system
Jon will purchase a power supply for the PA system

Open Discussions:

1. Wayne mentioned that someone broke the lock on the gate , it has been since replaced
PLEASE report any suspicious crime to our club exec's
2. Phone list to be posted in the club house

Adjournment: Gale Moved to adjournment 8:25

Red Deer “one day” Pattern contest is in the books!

By: Will Gross

On July 12th, 2015 the Central Alberta Radio Fun Fliers held a one day pattern contest. We had a total of 12 pilots from intermediate to FAI.



I want to start this article with thanking the Club's executive for CARFF's members for allowing us to hold this event and providing the hotdogs and buns (thanks Wayne H. for bringing them over); we could've never done it without your support. On behalf of the Pattern community, we want to say thank you!

On this contest we had the opportunity to test try [Travis Saylor's](#) scoring program. Our CARFF member wrote this scoring program for pattern and for what we were able to see, it ran without any issues!!! Well done Travis!

I want to thank [Travis Saylor](#) and [Alex Kellington](#), these two gents were the score keepers, they judged and to top it up Travis took the first place in intermediate and Alex took the 3rd place in the same class!! A total of 4 pilots flew in this category.



CARFF member Alex Kellington is one of the judges for Advanced on this round, he is just making sure that those lines are straight! ☺....or else....

The weather was awesome, just like what we ordered! We had a sunny morning and it was fairly warm throughout the day with a very light breeze at times. Just perfect! A little bit of haze and smoke but it was clear for the most part! Our fearless pattern pilots didn't even notice it!

This year we decided to try a new contest format. Usually Pattern contest are 2 days. Four rounds are flown on Saturday and two rounds on Sunday. Since most of our pilots are from outside of town (hint for CARFF members to support our events a bit more ☺) we decided to do a "one day" only event, with four rounds only, it was far more relaxing than a two days event.

Based on the feedback, the idea of one day contest was welcomed. We will probably do 2 or more one day events in the province next year, with one or two, full weekend events....Will see!

Flying was great, it was very evident that there is a motivated pattern community in Alberta which is great to see, and we had our good friends from Lethbridge, Calgary and Edmonton visiting and three Red Deer boys doing their very best.

Chad Northeast dominated in FAI (next time I'll put something in his coffee "insert evil laugh here"), he has been testing his contra rotating system in his OXAI Accuracy biplane.

Chad has been testing the prototype developed by Plettenberg with the Brenner contra drive system with Falcon Props.



The picture above is Chad's Accuracy Biplane made by Oxai.



Picture above: Chad Northeast holding his "Accuracy" Biplane made by OXAI & Will Gross holding his "Status" biplane made by Nishioka.

Final results:

Intermediate:

1st Place: Travis Saylor (*CARFF Member)

2nd Place: John Maher

3rd Place: Alex Kellington (*CARFF Member)

Advanced:

1st Place: Dennis Peperkorn

2nd Place: Bob Charles

NEXT CARFF FLYING EVENT: CARFF Airshow, Sunday July 26, CARFF Bawtinheimer Field, 1:00PM to 4:00PM

Masters:1stPlace: Nedim Bek2ndPlace: Jess Desrosiers3rdPlace: Marty Masse**FAI:**1st Place: Chad Northeast2ndPlace: Will Gross (*CARFF Member)

The next big event coming up in the F3A Pattern world is the World's Championship in Switzerland; we are taking off on August 2nd. There is still time to purchase a raffle ticket to help and support the Canadian F3A Team.

A brand new F3A plane RTF is going to be raffled on July 19th.

<http://members.shaw.ca/pwnews/teamcanadaf3a2015/tc2015raffle.html>

Meet the F3A Canadian Team 2015:

F3A Team Canada 2015, Pilots Chad Northeast, Michi Akimoto, Dave Reaville, Alternate Pilot Will Gross and Team Manager Hartley Hughson. Just missing our Junior Pilot Ethan Chariandy in the picture.



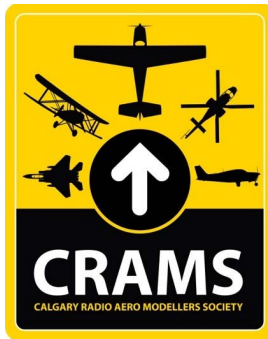
Thanks to our sponsors for their constant support!

Thanks again everyone for your support and I hope to see more of our members in future events!

Practice, practice, practice....

See you at field!

Will Gross



Summer Fun Fly

Saturday August 8th 10am to 4 pm

The Calgary Radio Aero Modeler Society (CRAMS) is happy to announce that our Summer Fun Fly will be held Saturday August 8th. This is a great opportunity to see many different types and sizes of aircraft, and watch some great pilots showing off a bit!



We have a lean-to shelter and several picnic tables, but bring your lawn chairs for a front row seat. Remember your sunscreen (and mosquito repellent!).

Our flying field is located just east of Irricana, accessed from highway 9 and east on Twp Rd 273

From the intersection of Country Hill Blvd (564) and Hwy 9 approximately 14kms North to Twp Rd 273, east on 273 approximately 0.5km and we are on the North side.

Our GPS coordinates are 51°18'58.2"N 113°35'06.7"W.

Or we can be found on Google as "Crams Field or C.R.A.M.S. Field"

If you would like more information on our club please visit www.crams.ca



WINDY WEST R/C CLUB PRESENTS

**AUGUST
7th - 9th**

**HUCK FEST
3**

Come join us at the Windy West Club Field for a full weekend of flying from 8:00 am Friday morning to 8:00 pm Sunday Evening

- Dry-Camping On-Site
- Burgers on Friday
- Pulled Pork on Saturday
- Swap Meet

**3 DAY GIANT SCALE
FUN FLY**

Location:
South of Coaldale
take Highway #845
5 Km South
1.5 Km East - 1.5 km South
Contact Phil Heninger
403-382-0142 • phil@teamheninger.com

DOGFIGHT OVER BENALTO

**A MUST ATTEND
EVENT**

**SEPTEMBER
19 ~ 20**

**AN OLD SCHOOL FUN FLY REUNION
1980 TO TODAY. EVERYONE IS WELCOME.**

IF YOU HAVE BEEN HERE BEFORE COMEBACK FOR MORE.

COME SEE FLYERS YOU HAVEN'T SEEN IN YEARS!

**NEW GUYS COME SEE WHAT THE OLD GUYS WERE TALKING
ABOUT.**

EVENTS INCLUDE:

**ODD & UNUSUAL ~ GLYDE CLYDE ~ TIMED FLIGHT
RIBBON CUTTING ~ LEMANS AEROBATICS ~ EGG DROP
AND SPIN MASTERS ~ LOTS OF FREE FLYING TIME
BRING YOUR GUITARS, FIDDLES, SAXOPHONES TO THE
SATURDAY NIGHT CAMPFIRE**

**SELF CONTAINED CAMPING AT THE HILLMAN FAMILY CAMPGROUND
SATURDAY NIGHT FIREWORKS COURTESY HILLMAN AIR**

LANDING FEES \$10 PER PILOT

**BRING YOUR DOGHOUSES, PAPER AIRPLANES, WITCHES,
AND AVIATION ODDITIES (SPECIAL PILOTS CHOICE AWARD
FOR THE ODD AND UNUSUAL)**

Contact: Gary Hillman 403-597-4187 or John Ferguson 403-302-3213

(a maac sanctioned event)

fergusoncomp@hotmail.com or cghillma@yahoo.ca