



The Gull

BULLETIN OF THE CENTRAL ONTARIO GLIDER GROUP

December 2007



2007 Executive

President
Vice President
Secretary
Safety

Bob Sherliker
Roy Bourke
Helmut Berger
Jozef Banial

Treasurer
Field Coordinator
Contest Coordinator
Newsletter

Tony Boothman
Doug Pike
Doug Pike
Roy Bourke

Web Site <http://www.cogg.ca>

New Year...New Executive

To start the new membership year off, you will notice a couple of changes in the executive of our club. After 18 years of service, Mike Thomas has finally decided to pass on the reins of the Field Coordinator job to someone else. Doug Pike has now taken on this job along with his regular job of Contest Coordinator. And Jack Nunn has passed on the job of Safety Officer to Joe Banial. Our sincere thanks to both Mike and Jack for their years of devoted service in their positions.

And with the new membership year comes a reminder that dues are now due. Please renew as quickly as possible to avoid any disruption in your ability to use the flying field or in missing a newsletter. And remember that we continue to require you to completely fill out a membership application form with your renewal. This is the only way we have of tracking any changes in your personal data in our membership database.

And please remember to keep your MAAC membership up to date as well.

2007 Annual General Meeting

Once again our AGM was held as a breakfast meeting New Penny Restaurant in Cookstown, 28 October 2007. Here are the recorded minutes.

Minutes of the Central Ontario Glider Group AGM for 2007

Hard to believe another flying season has gone by without too many problems, apart from changing fields four times. The sad part this year was of course the loss of our good friend Stuart Pierce on May 13th. I know you all agree with me that Stuart was an icon in our club, always friendly and funny. We hope you keep on soaring above us and we will remember you always.

The turnout this year was the same as last year with 17 members and three spouses. Once again a good breakfast was served which everyone enjoyed. At about 10 am our prez, Greg Galler called the meeting to order.

The first item on the agenda was the:
Treasurer's Report by Tony Boothman:

We had 37 paid members for 2007 to this date, which is a slight improvement from last year. The total payouts for 2007 so far is approx. \$602.00, a bit less than in 2006. This consisted of the following items: Nov 06 AGM breakfast, Christmas gifts to field owners, Gull and mail costs, Field registration, BBQ cost, and flowers for Stuart Pearce's memorial.

The "profit" for the year was \$222.56.

Our bank balance as of Jul. 19th is \$1873.44 which is slightly higher than 2006. This money is earning interest, so we should be getting richer any time soon.

We discussed how we might spend some of this money, but the membership decided to keep it for rainy days. Thanks Tony.

The second item on the agenda was the:

Field Report by Mike Thomas:

Mike reported that we used four different field locations, which I believe is a record. Mike stated that the foreman at Zander currently is Kevin Thompson, which I guess makes him our contact. Zander Sod Farms now owns Smelky's, he informed us.

The field was kept reasonably clean, however it must be stressed that we have to go out of our way to keep it that way. Please pick up garbage even if it is not yours.

Last but not least Mike is stepping down as Field Coordinator after 18 years in which he served COGG amazingly well. A big thanks Mike.

The third item on the agenda was the:

Safety Report by Jack Nunn:

It appears we had a safe season and nothing was reported by our venerable Mr. Nunn. He indicated as well that he is abdicating his position after quite a few years.

Thanks Jack, you deserve a rest.

Competition Report by Doug Pike:

We had eight contests scheduled in 2007. We were somewhat luckier with the weather than in previous years. Only the 2 meter contest was cancelled due to weather. The Electric Sport Sailplane contest in September was not cancelled, but the morning rain scared off all potential competitors, so no contest was held.

The Grand Champ for 2007 again was Doug Pike.

Thanks Doug.

(At this point the Contest schedule for 2008 was established. The Electric Sport Sailplane contest held in the Spring has not been well attended lately, so in the new schedule, it has been replaced by an F5J-type electric competition proposed by Doug. Rules for this new contest, are included in this newsletter.)



<u>Contest</u>	<u>Dates</u>	<u>C. D.</u>
2 Meter	May 25	Jozef Banial
Electric F5J *	June 1	Doug Pike
Open Man on Man	June 22	Doug Pike
Open Sailplane + RES	July 6	Doug Pike
Hand Launch	Aug 16	Ivan MacKenzie
Open Sailplane	Aug 17	Doug Pike
Electric Sport Sailplane*	Sept 7	Roy Bourke
Open Sailplane	Sept 14	Doug Pike

* Expect various changes to these two events, to be published in The Gull.

Other Corrections or anything else for 2007 will be posted in our newsletter "The Gull".

Election of Club Officers for 2008:

<u>Position</u>	<u>Name</u>	<u>Term</u>
President	Bob Sherliker	2 year term
Vice President	Roy Bourke	Ongoing
Secretary	Helmut Berger	Ongoing
Treasurer	Tony Boothman	Ongoing
Editor	Roy Bourke	Ongoing
Safety	Joe Banial	New
Field Coordinator	Doug Pike	New
Contest Coordinator	Doug Pike	Ongoing

New and Old Business:

As has been tradition now for years, our Field Coordinator, Doug Pike, will once again distribute approx. \$150 in Christmas presents for 2007 to important people at Zander.

Steve Cole volunteered to distribute the Gull to club members without Internet access. He will get an advance of \$100 to cover the cost for supplies and mailing. This duty had been carried out for several years by Mike Thomas and his wife Susan. Thanks Steve for your offer of service.

The Gull will be available for reading on the COGG web site.

Re: the website, Greg stated that we would be continuing with the old provider and that Des would continue as Webmaster. Greg will re-register the www.cogg.ca name for another two years at his own expense.

If anyone has something to report or ideas, please do not hesitate to E-mail our Gull editor for inclusion.

Review of Previous Action Items

At the 2006 Annual General Meeting, a number of motions were presented and passed. The status of action on these motions was reviewed:

Motions re: applications for membership and routing: Generally these were carried out throughout the year, with a couple of exceptions. The club will continue to require an application form filled out for all new or renewal memberships. On receipt of application forms, Tony will advise Roy of the names by E-mail immediately and, after he has logged them, forward the completed forms to Roy.

Motion re: visibly displaying current MAAC Cards: This was generally not done. Although most flyers had valid MAAC cards with them, they were not on display. Some discussion ensued as to whether visible MAAC cards were really necessary in view of the fact that MAAC membership is checked (sometimes) at contests, and Roy submits the membership list to MAAC each year for verification of current membership.

New Motion.... That all flyers shall attach a copy of their current MAAC and COGG membership cards to their frequency pegs, which must be on display on the frequency board while flying.

.....Carried

(The names of the mover and seconder were not recorded)

In discussion it was felt that this is an easy thing to do, and is common practice at many other clubs. The plastic covers for bank books, available at all banks, are very useful as weatherproof covers for these cards, which can be reduced-size copies of the MAAC and COGG membership cards.

Motion re: list of names of current COGG members be on display at the field: This was not done during the year. In discussion it was felt that implementation would be impractical and it was decided to rescind this action item.

Motion re: memberships after 1 September: This was carried out and will continue to be club policy. Memberships taken in after 1 September will be valid for the current membership year plus the following membership year.

Safety Signage

During the year, the MAAC insurance company mandated that all flying sites must display a warning

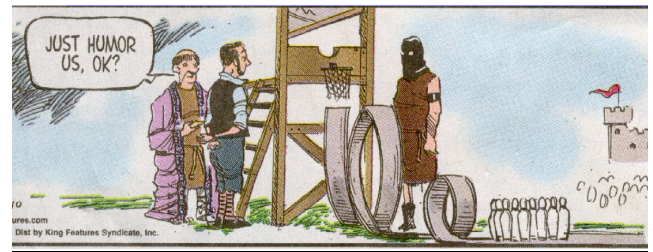
sign advising potential visitors and spectators that they are entering a danger area at their own risk. This sign **must** be displayed for the insurance policy to be valid. Vinyl stick-on copies of the sign are available to clubs from the MAAC office.

Action: Joe Banial offered to obtain two copies of the sign, and make plates to attach to the frequency board post and other appropriate location at the field, to attach and display the signs.

Meeting Adjourned

I wish everyone a happy upcoming holiday season and a busy building season!

Your friendly Secretary Helmut Berger



Electric F5J Rules

For Doug's upcoming F5J competition in the Spring (1 June 2008), here are some rules to build to:

Airframe – No limit on size or control functions.

Power System – Direct drive motor (of any type) with a published weight of no more than 68 grams.

Battery – 3 or fewer LiPo cells (any capacity)
9 or fewer NiCd or NiMH cells (any capacity)
3 or fewer LiFePO₄ (a.k.a. LiFe or M1)
(A123 or other manufacture)

Task - Man on Man in a 10 minute round
(Working Time 10 minutes)
One unlimited continuous motor run
Flight time starts when you stop the motor
Landing in a 15 meter dia. circle yields 30 points
Landing after the 10 min. Working Time ends
yields no landing points.

The power system will work well in sailplanes from 1.5 to 2 meter, or even larger if built light.

Suitable power systems for this class (motor, ESC and battery) are now very inexpensive. Contact Doug Pike for suggestions and sources.



Don't have an F5J ship for Spring contest? Why not try a Spirit of Yesteryear Talisman? This interesting lightweight electric sailplane was designed by our own Neil Tinker and Stuart Pearce and is available in kit form from Spirit of Yesteryear, or the Hobby Place shop in Barrie (57 Essa Road, 705-737-0532).

The aircraft has a span of 60", wing area of 400 sq.in. and builds to a flying weight of 16-18 oz yielding a wing loading of 5.8 – 6.3 oz./sq.ft. You even have a choice of four tail configurations for it, all from the same kit. The kit price is about \$55.00

The Talisman was designed for a direct drive Speed 400 (65 gm), but the rules for Doug's contest allow any motor up to 68 gm. advertised weight. And with the low low price of some really nice brushless motors now, the Talisman should really do well in climb with a good outrunner in that weight category.

We might be able to negotiate a discounted price for a number of these kits. If you would be interested in getting in on a bulk purchase of Talisman kits, contact Doug Pike and we'll see what we can do.

The ABC's of 123's

(Or what I have learned so far about A123 batteries since Pat MacKenzie got me started with his very informative talk to the October EMFSO meeting)

**Roy Bourke
MAAC 204L**

After many years of history and experience in model aviation with the venerable NiCd cell types, and more recently with NiMH, Li-metal, Li-ion and now LiPo chemistries, along comes yet another cell to challenge our adaptability to the very rapid advances of late in battery technology. The A123 cell promises to deliver many of the advantages of the previous cell types with fewer of the problems.

The A123 cell (also referred to as M1 cell) is a development of A123 Systems Ltd. of Massachusetts, introduced in 2006 with a view to applications in several potential heavy-duty applications such as hybrid electric automobiles, aviation, military, cordless power tools, backup power supplies, etc. And the company is continuing to look for potential applications in industry and government. (The company's name comes from the symbol for a constant, A_{123} , in one of the equations in nanotechnology.). The chemistry is Lithium Iron Phosphate (LiFePO₄ or abbreviated to LiFe), that the company calls "nanophosphate" material.

Already A123 Systems' development of the M1 cell has been adopted heavily in contractor-grade DeWalt power tools. Model aviation is also a very obvious application that can benefit from the development. These M1 cells offer very fast charge rates (10-15 minutes), high discharge rates (33C or more), exhibit very flat discharge curves, and approach the mechanical and electrical ruggedness of NiCd cells. They can be used as direct replacement of LiPo packs, but can tolerate a much broader voltage range so they are less likely than LiPo's to be damaged by overcharging or by inadvertently allowing the cell to discharge to a low value. The self-discharge rate of the A123 cell is comparable to that of a LiPo.

And safety is a **big** plus. Have you ever seen a LiPo "blow up"? It is a pretty scary sight! It could easily remind you of the explosion of a napalm land mine, and a multiple-cell pack goes off like a roman candle with each cell exploding in succession. (Have a look at <http://www.utahflyers.org/> and click on "LiPo Fires 1,2 or 3" if you want to see some entertaining videos of LiPo's being set off deliberately). The explosion of an A123 battery (yes they will explode if excessively overcharged) is more like a balloon popping off, with no flames and no heat. And since the cells are more rugged mechanically, they are better able to survive a crash without becoming dangerous.

At the moment there is only one size and shape readily available, a cylindrical cell 26mm dia. by 66.5mm long that delivers 2300mAh of power. Other sizes and shapes will be forthcoming. The average voltage delivered is 3.3V (3.6 volts at charge). The nominal voltage of a LiPo cell 3.7V (4.2V at charge) but the average voltage under load is also about 3.3V.

Weight

At 70gm per cell, the weight of the M1 is slightly higher than the weight of a LiPo cell of equivalent

capacity. But compared to NiCd or NiMH cells, an A123 cell is in the same ballpark of power density as a LiPo cell. As a battery, a 3-cell A123 pack with connectors is about the same weight as a 7-cell 800AR NiCd pack, but with three times the capacity and a higher voltage delivery. A 2-cell A123 pack nicely replaces a 7-cell 500AR NiCd pack but with over four times the capacity. A 3-cell A123 pack is about 18% heavier than an equivalent LiPo pack, but is much safer, half the price, and faster to charge.

Availability

A123 cells can be purchased as individual cells from several mail order companies, but prices range from \$15.00 to \$20.00 per cell. A more economical way of buying them is to buy the DeWalt DC9360 power pack for power tools, which contains ten A123 cells. The quoted retail price of the DeWalt pack is close to \$200.00, but new DC9360 packs can readily be obtained on E-bay for about \$80.00 to \$95.00. It is a bit tricky to take the DeWalt pack apart to retrieve the cells, but there are plenty of instructions available on the Internet to tell you how to do it. (Just Google "A123 packs" for lots of "how to" information)



A Word of Caution. A123 cells have aluminum casings. If you do dismantle a DeWalt pack, unless you are an expert in making electrical connections to aluminum without using any heat, be careful not to remove the spot-welded joiner tabs from the cells because they can be soldered readily. Another caution is to remember that the button on an A123 cell is negative, and the case is positive.

Charging

The charging requirements for the M1 cells are not very much different from charging a LiPo. Instead of limiting the charging voltage to 4.2V and limiting the current in the early part of the charge (as you do in charging a LiPo) M1 cells should be charged at a maximum of 3.6V per cell, and current limiting is not usually necessary. You could even use a LiPo charger to charge an M1 pack, except it is not really recommended. The excess voltage at 4.2V per cell will bleed off rapidly after charge, but the life of the M1 cells may be shortened. An M1 pack could be charged simply with a voltage-regulated power supply. Some people make their own chargers. And some modify inexpensive laptop 12V power adapters to supply the correct voltages to charge M1 packs. But the easiest solution is to buy commercially available equipment.

Both FMA and AstroFlight sell chargers for A123 cells and packs, at prices of over \$100. Both FMA and AstroFlight sell chargers for A123 cells and packs, at prices of \$100 or more.

(Continued next page >>>>>>)

Charging...cont'd

A cheaper solution is to purchase a "Dapter+" which can convert an existing NiCd or NiMH supply charger to a charging system suitable for A123 packs. ("Dapter" is short for "LiPo Adapter"). The new Dapter+ can charge both LiPo and A123 packs. The device is installed in the charging line from a supply charger (NiCd charger, etc) and programmed for either LiPo or A123. The limiting current is set on the supply charger, up to 10 Amps (many NiCd chargers can go only to 5A maximum.). The Dapter+ counts the number of cells, and charges the pack to about a 90% charge, with an option to go a bit higher to about 95% charge if desired. Cost of the device is about \$40.00. There also is Dual Dapter version that will charge two packs simultaneously. (<http://www.slkelectronics.com/>)

Balancing

With LiPo packs, balancing is a critical requirement, since the consequence of one cell overcharged in a pack can be explosion and fire. A123 packs are far less susceptible to damage from imbalance. Testing has indicated that M1 packs need be balanced only occasionally. However many users do not take chances, and balance with every charge.

Some chargers have built-in balancing capability, by a balancing circuit, or by incorporating a separate charger for each cell in the pack. You can also connect a balancing circuit that can be used in conjunction with a charger that is applying a charging voltage across the entire pack. There are a number of these devices on the market for LiPo packs, but most manufacturers have not caught up with the A123 technology as yet. But AstroFlight has, with their "Blinky" that has been redesigned for A123 batteries. The A123 Blinky will balance any pack from 2– 6 cells, either during or any time after charge. (Cost is about \$25.00). No doubt, similar devices from other manufacturers will soon be arriving on the market.

Conclusion

Well, there you have it, just enough information to get you started in this new area of battery technology. There are still advantages for LiPo's in many applications. Because of their slightly higher power density, you can pack more power or more flight duration into a given weight of battery, and because of their shape it may be possible to fit a LiPo pack better into a confined space in an aircraft. And of course there is a huge variety of sizes and capacities readily available in LiPo chemistry. But for many applications, the A123 battery delivers a lot of advantages in safety, ruggedness, longevity and cost. And the future looks bright for more variety of choice in the LiFePO₄ cell chemistry and in all the support equipment that goes along with the technology.

**Have a
Very Merry Christmas
everybody
And a
Happy and Productive
New Year**