



Sydney Radio Control Society

October 2006

Newsletter

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Quarterly General Meeting

*To be held at the field on Saturday 18th November at
11.00am*



Agenda:

- **Apologies**
- **Previous Minutes**
- **Matters arising**
- **Presidents Report**
- **Treasurers Report**
- **Secretaries Report**
- **Other Business**

Please note that any article, technical or historical fact or fiction other than the published minutes of general meetings of the club, express the opinions of the writer of such articles and do not necessarily become fact. The club accepts no responsibility for any outcome of any incident that may or may not be attributed to any matter printed in the club newsletters.

SYDNEY RADIO CONTROL SOCIETY – inc. CLUB NEWSLETTER

THE 2006 – 2007 COMMITTEE

NAME	POSITION	PHONE	E-MAIL ADDRESS
Mike Close	President	(02) 9872 6469	mikeclose@cherry.com.au
Matt Holloway	Vice President	(02) 9670 1164 0412 522 050	mholloway@mmm.com
Rex Broadbent	Secretary	(02) 9686 3114 0417 471 361	rexp@optusnet.com.au
Ewald Klinkenberg	Treasurer & Registrar	(02) 98312817	Klink@idx.com.au
Stephen Liseo	Newsletter Editor	0418 456 114	liseos@hillsgrammar.nsw.edu.au
Baldo Polizzi	Ordinary Member	(02) 9630 4019 0418 479971	balmap5@bigpond.com
Corinne Pellatt	Ordinary Member		corinnepellatt@yahoo.com.au

CLUB EVENTS

Date

Quaterly General Meeting
Christmas Party

Saturday 18th November
Sunday 10th December



These items can be purchased from the Club Treasurer

Club metal badges	\$5 ea.
Club cloth badges	\$5 ea.
SRCS stickers	\$0 50c ea
Club Tee shirt	\$25 ea
Club Caps	\$15 ea.



At the moment the Club has plenty of stock of caps and shirts available, so why not lash out any invest in a new Club Shirt and cap. Don't forget that the Club Badges issued to this years to financial members must be worn at all times. A perfect place to wear it is on your new cap.

These items are available from **Ewald Klinkenburg** at the field.

Sizes for the shirts are large and XLS in blue or grey.

PRESIDENT'S LETTER

Well, we are already well into the new financial year and Christmas will be here very shortly. The Scale Rally has been held and the new Committee has things well under control.

After the AGM there were two changes in personalities on the Committee and some adjustment in roles. Norm Bantin decided to have a rest having been on the Committee 'for ever'. As you may have heard Norm was honoured with Life Membership for his contribution over the years. You will find the letter of nomination elsewhere in this Newsletter and I am sure we will all warmly congratulate Norm for his well deserved recognition. Paul Toyne is also a relatively long serving member of the Committee who decided that the demands of his work needed to take precedence. Noone can argue with that and again I would like to thank Paul for the ideas and effort that he has put into the various roles that he has had. Maybe we will see them both back on the Committee at some time in the future.

Of course, this meant that there were resulting vacancies and Rex moved across to be the Secretary. Steven Liseo is now responsible for producing the Newsletter and Corinne Pellatt also joined the Committee. Hopefully we will all continue to have the support of the club but remember it is the members who control the overall policy and the committee are really there just to implement what you, the members, want.

Although the Committee has responsibilities, everything does not have to be left to them and we are always looking for help. The Scale Rally was an obvious example and it was good that we received sufficient help. Another example is the Phil Hibble shelter. Col Lyttle donated some tables when we were at Kellyville and then moved them over to Vineyard. Over the years the quality of the table top had deteriorated and Col Bacon has done the work to organise and fit a replacement. Thank you Col for this, and I would like to recognise Col Lyttle's original contribution the new top was secured to.

Of course now that we have a new very good quality top we have to look after it. The idea is still that the Phil Hibble Shelter is a working area. That does not mean that the table can be used for filing and cutting. Please everyone who uses it leave it in good condition. Once it starts to deteriorate then it there will be less incentive for those who use it later.

Over the long weekend we were all alarmed to see survey pegs behind our flight line. Whilst we are assured it is for a flood survey, I am sure many of us were a bit concerned about what it meant for our future and what we would do. It has certainly increased my determination that we do nothing that could adversely affect our tenure.

A very nasty photo showing an injury caused but a helicopter blade has been put up as a safety notice. I hope it reminds us that accidents do happen and very quickly and without warning as well. Whilst there is no club rule, if you are flying by yourself and something like that happened to you just think how you would be able to deal with it. Aircraft propellers have also done serious damage.

Despite these gloomy things model flying is great fun. Let us all be enthusiastic about it and work toward making it even better for ourselves and our fellow club members.

I hope to see you all at the QGM and happy and safe flying.

Mike Close
President

Letter from the editor

I would like to start my first contribution as newsletter editor by thanking my predecessor, Norm Bantin for doing such a great job for so many years. Norm has made the task of taking over a lot easier for me by taking the time to show me the ropes and for having such organized files on his computer, as a computer nerd I really appreciate a man who knows how to organize his files. I would also like to personally congratulate Norm on the acceptance of his nomination as Life Member.

Now it's my turn to take the reigns and I hope I am able to do as good a job.

That's where you come in.

I would really like to hear suggestions and ideas as to what you would like to see in the newsletter. Have you read an interesting article lately, found a good web site, preferably related to our hobby, then let me know. I welcome any and all contributions all members have to make. I would also like to hear of any members who have competed in competitions or events.

You can submit any content, suggestions or ideas to me personally at the field, I am there most Saturdays, you cant miss me I'm the handsome one, or by email at

liseos@hillsgrammar.nsw.edu.au.

Now that just about everyone has digital cameras I would also love to receive any photos you may have taken (preferably of model aircraft).

I look forward to bringing you many interesting newsletters.

Stephen Liseo
Newsletter Editor



PRESIDENT'S REPORT 2005/2006



This year's report is somewhat different to the normal situation when things generally roll on from one year to the next. Whilst there is of course a strong element of business as usual there are some things that I need to record.

The AGM last year was held slightly later than normal and just after we had completed the Phil Hibble Shelter. We now have had the benefit of it for nearly a year and it has provided day-to-day shelter whilst models are being worked on, and enables us to keep the area under the awning just for socialising. There was occasional confusion on the intent of it but that has all been sorted out and the new area is also good when we have Bar B Q's. The Committee has in hand fitting new tabletops to improve the hygiene. It was formally opened at the next QGM. Unfortunately Phil was not able to be present and he died very shortly afterwards and so was never able to see what his generosity had provided for all of us to benefit from. We were very pleased to accept the offer of a perpetual trophy in memory of Phil and it has been agreed it will be awarded for Clubman of the Year at the end of each calendar year. The new Committee will need to finalise the details.

This year we decided as an experiment to hold the General Meetings here at the field. Whilst we have not yet had a serious problem with the weather, and that will make it a bit difficult, it has been a success. Attendance has definitely been better. As long as we do not want to expand the function of meeting, other than with a Bar B Q, it has enabled more members to contribute to the decisions that are made.

At General Meetings last year the club decided to close the Membership but to give the Committee some discretion, with the guidance that preference should be given to those who are new to the sport or to the Sydney area. The Committee has tried very hard to be consistent and this has taken quite a lot of time. In the end we have accepted everyone who is new to flying but we have rejected a number of other applicants. In this situation you can never please everyone and some of us probably considered that someone that we know personally should have been allowed to join. The Committee has felt that once we start making exceptions then it becomes almost impossible to control. I have certainly had to advise some friends of mine that they were unlikely to be successful. Whilst many of us have mixed views on the original decision, when you see the serious problem that at least one other club in the neighborhood has, the reasons that were given from the floor at the meeting do seem to be justified.

We continue to promote ourselves as good neighbors and tell the farmer when we see anything that we think he should be aware of. Hopefully he appreciates that. In these times of drought, when there is not much grass around, it is not easy to see the area that we actually use. I am sure that the farmer would love to once again have waist high grass, which we then have to cut very regularly for the runway, the pits and the other areas. What we have to continue to be vigilant on is that we do not allow our area to creep outwards, as at present no extra mowing would need to be done. The farmer is very aware of the area that we use and knew we were here when he signed his lease. However, as he said, every blade of grass that we mow is one less for his cattle to eat. The last thing we would need is to find that we need to mow more than he expects when the rain does come and that he complains to Roadmaster.

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The committee decided not to hold most of the club events that we had in previous years. The only one remaining was the Kevin Gray Fun Fly. The reason was that the attendance level of the other events continued to be poor and they were not achieving the aim of improving the standard of both flying and modeling in the club. It was also with some personal sadness that it was decided not to join in the Blacktown Festival of Sport, which was a major promotion of theirs this year. It could have been good for the club, model aviation and for the area. However it would have taken effort to make it successful and did have some other downsides as well. We do intend to try to do a more significant promotion for the Scale Rally in October, and that is another task that the new Committee will need to be involved with very soon.

To replace the events, we are hoping to organise a Club Day in November and we had an Instruction Day a three weeks ago. If there are other ideas on what can be done for the benefit of the membership please let us have them for consideration. The Instruction Day gave the opportunity to present some topics for skills enhancement and review what was required for both Bronze and Gold Wings. I would like to thank everyone who contributed to this and also for the ongoing instruction during the year. We have to continue to support the wings scheme from Bronze through to Instructor and anyone who is thinking about, or actually doing any instruction, should seriously consider doing the Instructors Course. These days is held at the State Field in Cootamundra. Not only does it assist in getting a common approach, it gives a sense of achievement and should improve your own flying and safety perceptions. If anyone is interested please let the Committee know.

We remain fortunate that there are members who are prepared to do the work to keep the club running, although there is sometimes some frustration that it is left to the same few. I would urge everyone to consider putting a bit of time back in to help either on the committee or otherwise. There are always opportunities and over the years it has been a real benefit to the club that there has been a modest roll over of members of the committee giving a blend of experience and new ideas.

The roles that have defined tasks are the Secretary, Newsletter Editor and Treasurer/Registrar. We should thank Paul, Norm and Ewald for continuing to do these tasks last year. Matt of course, as Vice President, with Baldo and Rex as ordinary committee members, all continued to contribute to both at meetings, at the field and in Committee discussions. Whilst these roles do not take vast amount of time, without them the club would cease to function. Paul, Norm and others have also been at the field early on the occasions that mowing has been required. On behalf of all members I should also thank you all for your contribution. I know I am likely to have missed someone, but finally we should thank Craig for continuing to maintain the Web Page, which is the first entry point for many to find out what our club is like.

As usual next year there will be a new committee and we should look forward to things continuing and also improving. Any ideas are always welcome.

Mike Close
SRCS President.
19th August 2006

Nomination for Life Member

Norm Bantin.

I would like, on a personal basis, to nominate Norm for Life Members of SRCS. Life Membership is an honour which has to be carefully considered and earned through service to the Club. I believe that Norm more than qualifies.

He came on to the Committee in 1992, shortly after joining the club. Since then he has served continuously in a number of roles.

He has been the Secretary and then became the Newsletter Editor. In the latter roles he has produced the required 4 Newsletters a year and they have always been on time despite late contributions from others and he has had to search for material to supplement that provided by Club Members. The Newsletter with Norm as Editor has been a source of both Club news and interesting information, making it a valuable contribution to the club ambience.

He has also had to stand in for various Secretaries, being an ever present attendee, at both Committee and General Meetings taking and issuing the minutes.

Norm's visible contribution has also extended to him being the organiser of Club Bar B Q's for many years, both at the Scale Rally and other less formal events. His behind the scene activities have also been to the fore in contributing to making the club function smoothly and are something that I and the rest of the Committee have appreciated.

I hope that this motion will be seconded and, if the membership agrees it is appropriated, vote for Norm to become our fifth current Life Member.



Mike Close
17th August 2006

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MINUTES OF THE 2006 SRCS ANNUAL GENERAL MEETING

The meeting was held at SRCS Flying Field on Saturday 19th August 2006. Mike Close opened the meeting at 11:00 a.m.

Norm Bantin recorded the minutes

<u>PRESENT</u>	Baldo Polizzi	Mike Close
	Norm Bantin	Col Bruce
	Renton Wright	Ewald Klinkenberg
	Col Lyttle	Phil Norris
	Matt Holloway	Bob Evans
	Steve Liseo	Ray Vella
	John Cahill	Tim Owen
	Rubin Cipriotto	John Howard
	Derek Slevin	Col Bacon
	Paul Duffel	Paul Stewart
	Gary Fong	Larry James
	Dean Field	Robert Zyp

<u>APOLOGIES</u>	Paul Toyne	Rex Broadbent
	P. Chapman	R. Ripley

MINUTES OF THE PREVIOUS ANNUAL GENERAL MEETING

Phil Norris moved that the minutes of the previous AGM be accepted as an accurate and true record of the meeting, seconded by Renton Wright – motion carried.

MINUTES OF THE PREVIOUS QUARTERLY GENERAL MEETING

Phil Norris moved that the minutes of the previous QGM held on 10-6-06 be accepted as an accurate and true record of the meeting, seconded by Bob Evans – motion carried.

MATTERS ARISING AGM

There were no matters arising from the previous AGM.

MATTERS ARISING QGM 10-06-06

Mike Close to trim the existing spare frequency board for the 2.4 GHz frequencies.

PRESIDENTS, SECRETARIES AND TREASURERS REPORTS

The President Mike Close and the Treasurer gave their reports and copies of these are located elsewhere in this newsletter. John Howard moved that the accounts presented by the Treasurer and audited by Rex Broadbent be accepted – seconded by Derek Slevin – motion carried. Mike Close discussed the auditor for this years accounts and asked the meeting if anybody knew of anyone that could do the job. As there was no reply, Mike Close moved that the committee would determine the Auditor – Moved Baldo Polizzi, seconded Rubin Cipriotto – motion carried

CORRESPONDENCE IN Nomination Form from Mike Close for position of President

CORRESPONDENCE OUT - Nil

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ELECTION OF COMMITTEE

The Secretary received the following nomination for membership on the Committee as required 28 days before the AGM.

<u>POSITION</u>	<u>NOMINEE</u>	<u>NOMINATED BY</u>	<u>SECONDED BY</u>
President	Mike Close	Greg Fiddling	Bob Evans

There were no nominations for any of the other positions so nominations were called for from the floor.

- Phil Norris nominated Matt Holloway for the position of Vice President – seconded by Norm Bantin -accepted
- Ewald Klinkenberg nominated Rex Broadbent for the position of Secretary – seconded by Baldo Polizzi -accepted
- Baldo Polizzi nominated Ewald Klinkenberg for the position of Treasurer – seconded by Derek Slevin -accepted
- Norm Bantin nominated Steve Liseo for the position of Newsletter Editor – seconded by Larry James -accepted
- Norm Bantin nominated Corinne Pellatt for the position of Ordinary Member – seconded by Ray Vella -accepted
- Ewald Klinkenberg nominated Baldo Polizzi for the position of Ordinary Member – seconded by Phil Norris -accepted

As there was only one nomination for each position Mike Close declared the positions filled. Mike Close thanked Norm Bantin and Paul Toyne for their contributions as Newsletter Editor and Secretary and welcomed the new members to the committee.

OTHER BUSINESS

- Norm Bantin and Ewald Klinkenberg were asked to leave the meeting so that the refund of the current Secretary, Treasurer and the Newsletter Editor fees could be discussed by the meeting. The members agreed to the refund as per the SRCS Rules. Proposed Phil Norris – seconded Bob Evans.
- Mike Close announced that Norm Bantin had been nominated for life membership – nominated Mike Close – seconded Matt Holloway - carried
- Col Bacon made a complaint regarding the Kevin Gray Fun Fly Event and felt that general flying should be allowed on the day and called for a motion to that effect. The issue was discussed at length and a vote taken – 5 for and the rest against - motion lost.
- Tim Owen asked about the location of the first aid box. Matt explained that a new first aid kit is in the container in a black bag as is the accident report book.
- Norm Bantin raised the issue of whether to cap the membership and to confirm the closure of membership other than former members and those new to the sport. A discussion took place and it was agreed by the meeting that there should be no cap, which may restrict those new to the sport. Matt Holloway proposed that membership for the year 2006-2007 be limited to the current membership and to new and passed members but to consider all applicants as per the rules – seconded Ewald - carried.
- The issue of a separate area for helicopters was raised by Ray Vella and was discussed briefly – Mike Close said that the committee would look into it.
- Rubin Cipriotto suggested a suggestion box be implemented- the issue was discussed but the meeting did not think it to be necessary.

TREASURES REPORT

Balance Sheet August 2006

	This Year	Last Year	\$ Difference
Assets			
Current Assets			
Cash On Hand			
Westpac - chq a/c	\$4,668.61	\$10,869.39	-\$6,200.78
Petty Cash	\$10.00	\$10.00	\$0.00
Total Cash On Hand	\$4,678.61	\$10,879.39	-\$6,200.78
Investments			
Westpac term deposit	\$17,317.96	\$16,553.03	\$764.93
ANZ term deposit	\$32,274.96	\$30,290.22	\$1,984.74
Total Investments	\$49,592.92	\$46,843.25	\$2,749.67
Total Current Assets	\$54,271.53	\$57,722.64	-\$3,451.11
Other Assets			
Deposits Paid	\$50.00	\$50.00	\$0.00
Total Other Assets	\$50.00	\$50.00	\$0.00
Buildings			
Furniture & Fixtures			
Equipment at Cost	\$15,535.23	\$16,568.73	-\$1,033.50
Less Accum Dep	-\$11,154.47	-\$10,766.28	-\$388.19
Total Furniture & Fixtures	\$4,380.76	\$5,802.45	-\$1,421.69
Total Assets	\$58,702.29	\$63,575.09	-\$4,872.80
Liabilities			
Long-Term Liabilities			
Total Liabilities	\$0.00	\$0.00	\$0.00
Net Assets	\$58,702.29	\$63,575.09	-\$4,872.80
Equity			
Retained Earnings	\$53,699.08	\$56,441.70	-\$2,742.62
Current Year	\$5,003.21	\$7,133.39	-\$2,130.18
Surplus/Deficit			
Total Equity	\$58,702.29	\$63,575.09	-\$4,872.80

Profit and Loss Statement
July 2006 through August 2006

	This Year	Last Year
<u>Income</u>		
Club Clothing	\$20.00	\$0.00
Donations	\$0.00	\$5.00
Gate Keys	\$90.00	\$60.00
Interest	\$1,764.04	\$788.24
Joining Fees	\$135.00	\$135.00
Member Fees	\$14,504.00	\$15,873.00
Total Income	\$16,513.04	\$16,861.24
Expenses		
Badges	\$112.90	\$0.00
Bank Charges	\$0.00	\$36.60
Competition Prizes	\$75.00	\$27.00
Website	\$0.00	\$82.50
MAS fees	\$10,995.00	\$9,215.00
Postage & shipping	\$0.00	\$100.00
News letter	\$218.03	\$0.00
Stationary	\$108.90	\$13.75
Refund of membership	\$0.00	\$253.00
Total Expenses	\$11,509.83	\$9,727.85
Net Surplus / (Deficit)	\$5,003.21	\$7,133.39

Membership 2006 -2007

Member Type	No
Associate	5
Junior	1
Life	4
Pensioner	6
Senior	80
Total	96

SRC S C hristmas Party

Ho Ho Ho,
The Club Christmas Party is to be held at the Riverstone Memorial Club on Sunday 10th December 2006 from 11.30AM. Come along with your partner and friends and enjoy a great lunch and a few drinks. The food is great, either Chinese or Australian food is available, around \$10.00 per meal. There is no need to book.



FOR SALE

Clancy Lazy Bee Kit

Wing span 72 inches \$200.00

OS bgx1 35cc 2 stroke motor with a pitts muffler, used, as is \$600.00



**Contact
Ewald
98312817 after 6
pm**

2006 SRCS SCALE RALLY

A cool day greeted us which was very welcome after the 35 degree plus during setting up on the Saturday. Thanks to the publicity that Steven Liseo had organised we had more than the usual number of visitors. It was slightly unfortunate that the PA system did not work properly so we were not able to describe what was going on as well as normal.



It was also disappointing that the number of entries did not match the publicity that had been put out, possibly due to the changed methodology of the MASNSW Contest Calender. However we had 18 aircraft which was an average number for recent times. There were 5 members of the Werrington Club who were very appreciative of having somewhere to fly for the day with the current problems that they have at their own field, although several of them had been to our event before. Nine of the aircraft belonged to SRCS Members.

The day went without incident except for a very unfortunate dead stick and collision with a tree which totally destroyed the Pitts Special owned by Werrington member Davis Ragen. We were all very upset to see the damage. Everyone had plenty of opportunity to fly although the wind did increase after lunch and most decided that enough was enough around that time.



Steve Vickers gave his usual professional view on the static impression of the entries and the flying was judged by Ewald, Tim and Col Lyttle. As always they received a round of applause at the end for their very welcome and essential contribution to the day. Once again we had a Top Flite Spitfire donated by Dawn Trading for the raffle and Rex found that selling tickets was not too hard. Thanks to the very generous donations from our other sponsors we also had a very valuable prize pool. These were 3M, Barclays Hobbies, Col Taylor, Hobbies in the Hills, Hobby Headquarters, Kelletts and Wing 'N Things.



When the final scores were added up, first place in Standard Sportsman went to David Ranson who flew his very nice Sopworth Pup very smoothly. Glen Ure from Werrington won the Mammoth Sportsman with his very impressive Red Bull Yak 55 and on different flights combined good scale flying with examples of its 3D capability. Robert Zyp won Expert once again with his usual polished performance using his Gypsy Moth. Other SRCS placegetters were Larry James with his PC 9 and Matt Holloway with the Pitts Special. Matt's B-25 also won the Pilots Choice.



Obvious much effort was put in to get ready for the day as well as at the event. Much of this was done by the committee but of course club members helped during the set up and on the day. The help on the gate, the transmitter pound, registration, car park and the canteen was much appreciated. As well as those I have already mentioned by name thanks are due to Noel Dalton who mowed the field the day before and Michael Murdaca who spent most of the day helping with the Bar B Q. Whether I have mentioned you by name or not I would like to thank everyone, pilots, helpers and spectators, for making the day a success.

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SHEPPARTON 2006



The Mammoth Scale Rally at Shepparton has the reputation of not always having the best of the weather. This year, though, it was magnificent with it being warm and with little wind.

There was the normal wide variety of very good large scale aircraft ranging from very detailed scratch built models, to ARF's which continue to increase in numbers. The large numbers of spectators really appreciate the show that is put on.



SRCS was represented by Col Bruce, Mike Close, Ewald Klinkenburg, Derek Slevin, and Robert Zyp who all had aircraft there. Phil Chapman, Paul Duffel and Tim Owen came along to assist and to enjoy the atmosphere. Robert did not particularly enjoy the atmosphere on the Saturday as he could not get one of the engines on his B-25 to run reliably and sensibly decided not to risk flying it. Fortunately he was able to find the fuel problem overnight and so was able to enjoy the Sunday much more. Mike told everyone who was prepared to listen, and many who were

not as well, that he could not land his Beaver properly. When late in the day he decided to give his Bulldog a rest, he then did an absolutely perfect landing at the first attempt.

Sunday was not such a good day for SRCS and not because Mike showed he really could not land the Beaver. Every event has the occasional bad luck story and there were four serious crashes. Unfortunately two of them involved SRCS members in one incident. Ewald and Derek both decided to do a low pass and the Cub and the Pawnee entered exactly the same bit of the sky. It was very sad. The organisers do have a draw for those who crash and although Ewald won the OS91 four stroke we can all sympathise with his comment that he would rather have his aircraft.



For a couple of years they have changed the format of the prizes and they are now presented on a lucky draw basis through both days. I don't think that SRCS were lucky in any of them. Despite this everyone had a great time, a reasonable amount of flying and resolved that they would be back next year. Some hotel bookings were even made. Anyone who has never been either to the event to fly or as a spectator should really consider going next year when hopefully the weather will be kind again. It really is the premium event of its type in Australia.



Lithium Polymer Batteries

There is nothing like the sound of a well tuned internal combustion engine screaming through the sky at a million miles an hour, but whether we like it or not electric models are here in numbers and here to stay.

The advent of Lithium Polymer (LiPo) batteries has had a dramatic impact on the performance of model aircraft, they can deliver a huge current for not great deal of weight. As with any new or emerging technology however there is a great deal of misinformation around regarding their use. If you decide to use LiPo batteries it is more critical that with any previous battery technology that you have the right information and equipment because if used or charged incorrectly they have been known to have dire consequences.

As more and more models turn up at our club powered by these batteries I thought it would be appropriate to find some information regarding safe use of this technology. I have included here an article by Jim McPherson from www.rcgroups.com, the article outlines some of the safety precautions required when using and charging LiPo Batteries.

1. Charging/Saftey IMPORTANT!

Until you are willing to follow all safety precautions, DO NOT use lithium batteries. If your a type of person that prefers to push the limits of products, or be haphazard about following saftey requirements. Lithium technology is not for you. Read on to find out why.

Lithium cells must be charged very differently than NiCad or NiMH. They require a special charger specifically designed to charge lithium cells. In general any charger that can charge lithium ion can charge lithium polymer, assuming that the cell count is correct. You must NEVER charge lithium cells with a NiCad or NiMH only battery charger. This is dangerous. Charging cells is the most hazardous part of using lithium batteries. EXTREME care must be taken when charging them. It is important to set your charger to the correct voltage or cell count. Failure to do this can cause the battery to spew violent flames. There have been many fires directly caused by lithium batteries. PLEASE BE RESPONSIBLE when charging lithium batteries.

Here are a few MANDATORY guidelines for charging/using LiPos (Lithium Polymer Batteries).

- 1. Use only a charger approved for lithium batteries.** The charger may be designed for Li-Ion or Li-Poly. Both batteries are charged in exactly the same. Some older cell phone chargers may charge the batteries .1 volt to low (4.1 vs 4.2), but that will not harm the battery. However, inexpensive lithium chargers are widely available and the use of cellphone chargers is highly discouraged.
- 2. Make certain that the correct cell count is set on your charger.** Watch the charger very closely for the first few minutes to ensure that the correct cell count continues to be displayed. If you don't know how to do that, get a charger that you do know how or don't charge the batteries.
- 3. Use the Taps.** Before you charge a new Lithium pack, check the voltage of each cell individually. Then do this after every tenth cycle there after. This is absolutely critical in that an unbalanced pack can explode while charging even if the correct cell count is chosen. If the cells are not within 0.1 volts of each other then charge

each cell individually to 4.2 volts so that they are all equal. If after every discharge the pack is unbalanced you have a faulty cell and that pack must be replaced.

4. **Taps are provided on most new lithium packs.** Taps give you the ability to check individual cell voltages and charge one cell at a time. Make sure and get the appropriate connector to go into your taps. Don't try to stick your volt meter probes in the taps to measure voltage. They could slip and short your cells. Don't try to charge more than one cell at a time from the taps. Unless you have an isolated ground charging system, you'll short your batteries out. Refer to your individual cell maker for tap pin-outs.
5. **NEVER charge the batteries unattended.** This is the number one reason for houses and cars being burned to a crisp by lithium fires.
6. **Use a safe surface to charge your batteries** on so that if they burst into flame no damage will occur. Vented fire safes, pyrex dishes with sand in the bottom, fireplaces, plant pots, are all good options.
7. **DO NOT CHARGE AT MORE THAN 1C** unless specifically authorized by the pack vendor. I have personally had a fire in my home because of violating this rule. Today's highest discharge batteries can supposedly be safely charged at greater than 1C, however so far in all cases doing so shortens the life of the pack. Better to buy 3 packs than to try to charge 1 pack 3 times quickly. This may change in the future but as of Winter 2005 1C is still the recommended charge rate.
8. **DO NOT puncture the cell, ever.** If a cell balloons quickly place it in a fire safe place, especially if you were charging it when it ballooned. After you have let the cell sit in the fire safe place for at least 2 hours. Discharge the cell/pack slowly. This can be done by wiring a flashlight bulb of appropriate voltage (higher is ok, lower voltage is no) up to your batteries connector type and attaching the bulb to the battery. Wait until the light is completely off, then throw the battery away.
9. **If you crash with your lithium cells they may be damaged** such that they are shorted inside. The cells may look just fine. If you crash in ANY way carefully remove the battery pack from the aircraft and watch it carefully for at least the next 20 min. Several fires have been caused by damaged cells being thrown in the car and then the cells catch fire later and destroys the car completely.
10. **Charge your batteries in a open ventilated area.** If a battery does rupture or explode hazardous fumes and material will spew from the battery.
11. **Keep a bucket of sand nearby when you are flying or charging batteries.** This is a cost effective way to extinguish fires. This is very cheap and absolutely necessary.

12. **It can happen to you**, do not think to yourself that “it won't happen to me” as soon as you do that it you'll be trying to rescue your kids from your burning house or car. I'm very serious about this.

Now that we have covered that important topic let's move on to lighter matters:

2. Lithium What?

Lithium Polymer batteries are used in many electronic devices. Cell Phone, Laptops, PDA's, Hearing Aids just to name a few. Most, if not all, lithium polymer batteries are not designed for RC use, we use them in different applications than they were designed for. They are similar to Lithium Ion batteries in that they each have a nominal voltage of 3.6 volts, but dissimilar in that they do not have a hard metal casing but rather a flexible material encloses the chemicals inside. The "normal" lithium polymer batteries are thin rectangle shapes with two tabs on the top one positive one negative. The reason we use Lithium cells is that they are significantly lighter than comparable NiCad or NiMH batteries, which makes our planes fly longer and better.

3. Voltage and Cell Count:

LiPolys act differently than NiCad or NiMH batteries do when charging and discharging. Lithium batteries are fully charged when each cell has a voltage of 4.2 volts. They are fully discharged when each cell has a voltage of 3.0 volts. It is important not to exceed both the high voltage of 4.2 volts and the low voltage of 3.0 volts. Exceeding these limits can harm the battery.

The way to ensure that you do not go below 3.0 volts while flying is to set the low voltage cutoff (LVC) of your electronic speed control (ESC). It important to use a programmable ESC since the correct voltage cutoff is critical to the life of your batteries. Use the ESC's programming mode to set the LVC to 3.0 volts per cell with a hard cutoff, or 3.3 volts per cell with a soft cutoff. If your ESC does not have hard or soft cutoff, use 3.0 volts per cell. You will know when flying that it is time to land when you experience a sudden drop in power caused by the LVC. If your ESC has an automatic lithium mode. Use it, it will correctly sense the number of cells and set the auto cutoff appropriately.

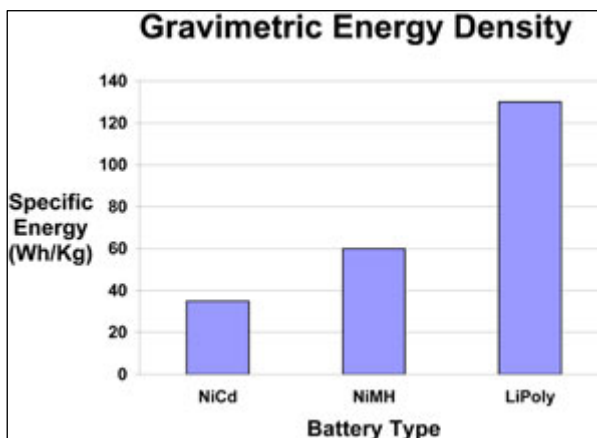
If you have previously been flying with NiCad or NiMH batteries, switching over to lithium polymer will result in a different number of cells being used. If you had 6 to 7 round cells then 2 lithium polymer cells will correctly duplicate the voltage of those cells. If you had 10-11 cells then 3 lithium polymer cells would be right for you. There are a lot of 8 cell flyer's out there that are stuck between 2 and 3 cells. In my experience the best option is to determine how many watts you were using before and duplicate that with your LiPos, Motor, and Prop. For example. If you were running 8 cells (9.6volts) at 10 amps on a speed 400 airplane, then you have $9.6 \times 10 = 96$ watts. So if you went with 2 lithium polymer cells (7.2 volts nominal) then you'd need to change your prop such that you used 13 amps. If you went to 3 LiPoly's (10.8 volts nominal) then you'd need to reduce the amperage to 8.9 amps. These estimates are approximate, and some experimentation is required for best results but conserving Watts is a good way to start.

4. 10C from 3S4P? Naming conventions explained.

How fast a battery can discharge is it's maximum current capacity. Current is generally rated in C's for the battery. C is how long it takes to discharge the battery in fractions of an hour. For instance 1 C discharges the battery in 1/1 hours or 1 hour. 2 C discharges the

battery in ½ or half an hour. All RC batteries are rated in milli Amp hours. If a battery is rated at 2000 mAh and you discharge it at 2000mA (or 2 amps, 1 amp = 1000mA) it will be completely discharged in one hour. The C rating of the battery is thus based on its capacity. A 2000mAh cell discharged at 2 amps is being discharged at 1C (2000mA x 1), a 2000mAh cell discharged at 6 amps is being discharged at 3C (2000mA x 3).

All batteries have limitations on how fast they can discharge. Because of this many LiPoly batteries are put in parallel to increase the current capacity of the battery pack. When 2 batteries are wired positive to positive and negative to negative they become like one battery with double the capacity. If you have 2 2000mAh cells and you wire them in parallel then the result is the same as 1 4000mAh cell. This 4000mAh cell has the same C rating as the original 2000mAh cells did. Thus if the 2000mAh cells could discharge at a maximum of 5C, or 10 amps then the new 4000mAh cell can also discharge at 5C or (4000mA x 5) 20 amps. This method of battery pack building allows us to use LiPoly batteries at higher currents than single cells could produce.



The naming convention that allows you to decipher how many cells are in parallel and how many are in series is the XSP method. The number in front of the S represents the number of series cells in the pack so 3S means it's a 3 cell pack. The number in front of P means the number of cells in parallel. So a 3S4P pack of 2100mAh cells has a total of 12 cells inside. It will have the voltage of any other 3S pack since the number of cells in series determines the voltage. It will have the current handling of 4 times the maximum C rating of the 12 individual cells. So say our 3S4P pack had a maximum discharge of 6C. That means that it has a nominal voltage of 10.8 volts (3x3.6) and a maximum discharge rate of 50.4 amps (2100mAh x 6Cx4P).

5. Which battery should you buy?

With so many choices out there it is difficult to decipher what is marketing hype, what is brand

loyalty, and what is outright lies. Battery manufacturers are constantly trying to one up one another. While capitalism can drive prices down, it also can give cause to false claims about products.

One great way to find out what the best battery is, is to look at graphs of the batteries performance. Looking at how low the voltage of the cell drops at various amperages will give you a metric to compare that battery to similar size/weight batteries.

If graphs aren't your thing then simply look at what other people are using in successful setups that are similar to your application. If a lot of people are reporting long flight times and lots of power from airplane X, with power system Y, and battery Z and you do the same, then if your setup is similar the same battery will probably work well for you.

It pays to learn something about Watts, Volts, and Amps. Understanding these concepts is beyond the scope of this document, but can serve you well in not only figuring out what battery is best but also in your electric aircraft hobby.

I'm not convinced that a 30C battery is really any better than a 10 or 20C battery. Sure a higher C rating means it can discharge faster. But at the same time a battery discharged at 20C continuously will be empty in 3 minutes. Do you really only want to use the battery for 3 minutes? I love having burst power in helicopters and boats, but in almost all other applications actually running a battery at or above 20C is useless to me. I prefer to run batteries at 8-10 C and have a little headroom if I need it.

A final note on choosing a battery. Don't cheap out. Confirm that your batteries are capable of running that the amperage level you plan to use them at. Running a cell at a higher C rating than the battery can handle can not only damage your batteries, but it can also damage your speed control. Castle Creations has an excellent article on how using a weak battery can destroy a perfectly good speed control of any brand. Better to buy a bit better battery than you need than to destroy your electronics.

6. Dealing with temperature.

Lithium batteries like heat, but not too much. In the winter time, try to keep your batteries from the cold as much as possible. Leave them in the car while your flying, or keep them in your cargo pants... etc. At the same time don't let them heat up too much. Try to keep your batteries from reaching 160F after use. This will prolong the life of the cells. A good way to measure temperature is a handheld IR meter, they can be found for around \$50.00 at most hobby shops.



Worlds First
Electric Paraglider
powered by Lipo
Batteries.