Newsletter

March 2015

Since I rejoined this Club in 2011, I found it to be a very happy place. There would be the odd differences of opinion - that's human nature. Nevertheless it always felt 'solid' and a good place to be. I think that the safety rules are considerably tighter than other Clubs that I have been a member in the past.

The more I got involved, the more I have enjoyed. This Club has some highly talented flyers - I would argue that we have some of the top flyers in this country. I am a very 'ordinary' member - I fly 'ordinary' models (for that read, models that I can afford to build or buy), but I thoroughly enjoy flying. This has proved to be a very good Club to enjoy that hobby. It is by far the very best flying field I've known.

It saddened me therefore to find that many members were up in arms about various issues mostly concerning the training of novices. Our Facebook contributions made the Club look bad but very obviously the matters had to be addressed urgently. Hence the last Social evening where the problems were discussed and hopefully resolved.

Complaints had been raised by the membership concerning trainees and the wording of the Club flying rules. We categorise trainees in two groups, those that have no experience and must learn from scratch and those that have learned to fly but have not yet obtained their BMFA 'A' certificate.

The complete novice who is learning to fly needs an instructor and under the Club rules, that person should hold a 'BMFA 'B' certificate. There were complaints that they didn't know how to contact an instructor and asked if a list be hung in the Clubhouse with contact details and a picture of that instructor. This will be done. The Club website gives all of the contact details a picture and contact number under the 'Training' tab. **You can phone any of these guys to arrange to meet at a mutually convenient time to go flying**.

The confusion came where the Flying Rules say that any member who has held an 'A' certificate for more than 12 months can stand with a pilot. The intention of this, is that when a trainee pilot has attained his initial skills i.e. he can safely fly, but just needs to get 'stick time' before taking his 'A', then this rule comes into force. In turn, this frees up the instructor to be able to carry on the valuable job of teaching another member to learn to fly.

If you have learned the basics and just need someone to stand with you, ask a member who has held an 'A' certificate for more than 12 months to stand with you. Speak to an instructor - he will find you a member willing to do this.

The system is that <u>any</u> new member, whether he is a seasoned flyer having an 'A' or 'B' certificate or a complete novice, he/she should contact Dave Swarbrick at a mutually convenient time.

Dave will take you through an induction going over the Club flying rules - no fly zones, pilot box positions etc.

Dave can be contacted on mobile Nº 07808803090

The Club holds training nights at the field on Wednesday evenings throughout the summer months (1st May till 31st August). There have been many evenings when no one turned up at these evenings in the past.

We would strongly urge any member who has an issue , to take it up with a committee member - you could even send in an email to myself and it will be discussed and you will be given a reply.

We are currently looking at the Club Constitution and the Club Flying Rules to bring them up to date and to take out any ambiguities. In conclusion, thanks to all of you who brought these matters to our attention. We, as a committee are here to serve the membership and to keep this Club a safe and enjoyable place to fly. I'm now getting off my soapbox and just look forward to seeing you at the field.

March 2015

The 'A' Test

by Dave Swarbrick

After the discussion about hand launched models for the A cert. on Wednesday the 18th March, John Higgins and myself, as club examiners, have been checking up on the rules in the BMFA handbook. Below is a direct copy from the 'A' cert guidelines.

I hope this will clear up any misunderstanding with regards to the rules for hand launching models for the A test. There is no reason why trainees cannot use a glider, or a model without an undercarriage, for training purposes but it cannot be used for the 'A' test.

The test can be performed with virtually any powered fixed wing model, i/c or electric. It is not expected that the test will be taken with an electric powered glider, however, as the Silent Flight Electric 'A' Certificate would be more appropriate to that type of model.

The minimum weight of a model used to take the test is 1 kg (2.2 lbs.) without fuel but with batteries The use of a gyro or autopilot is not allowed during the test. If any such system is fitted to the model it must be disabled during the test and you should check that this has been done.

Electric Powered Models must be treated as LIVE as soon as the main flight battery is connected, irrespective of radio state and great care must be demonstrated by the candidate. The arming sequence should be clearly understood and discussed/demonstrated to you by the candidate.

Whatever model is brought by the candidate, it must be suitable to fly the manoeuvres required by the test they are taking. You do not have the authority to alter the required manoeuvres to suit a model and if, in your opinion, the model is unsuitable for the test then you should explain this to the candidate and tell them that they cannot use that model. The selection of the model to do the test is the responsibility of the pilot and it is their ability you are testing, not the model.

The Member's Handbook states 'If, in the opinion of the Examiner the surface of the flying area is such that a rolling take-off would not be possible, hand launches may be

The 'A' Test continued...

by Dave Swarbrick

permitted'. The clear implication of this is that the candidate must turn up for the test with a model that is capable of taking off on it's own undercarriage or from a dolly. If they bring a model that cannot take off from the ground then they may not take the test under the 'suitable model' requirements.

Note also that you 'may' permit a hand launch. It's just as likely that you 'may not', in which case the test will have to be postponed and taken in better circumstances.

An Email from John Smith

Hi Peter

Just a few important things that have come to life recently

1. A few days ago whilst setting up a new model, this is what happened. We Went though the procedure of binding the trani and receiver all seemed well after a couple of attempts, we then went to centre the servo,s seemed ok then things went wrong. WE checked the battery that had recently been charged and found it to be flat, thinking to be U/S we then tried another, bound again, same thing happened but it was noted that one servo had moved, we disconnected that servo, tried a third battery , problem solved. This was a brand new unused servo out of the box, good job it was not going to fail on its first outing, you just don't know!

2 A model was assembled on the field throws checked engine started set and all seemed fine, pushed out to the flight line rechecked and away. 20 feet up something flew off and the model nose dived into the next field WRECKED. What caused this, an oversight by the pilot, the batteries were in the canopy and that's what flew off. He had forgotten to tighten the screw that hold the canopy in place. Sad and expensive but a lessen learnt the hard way.

3 Not a local happening but non the less important. An expensive electric model was being checked out,the model was being restrained by a non modeller the throws checked and engine run up, this was a big model with a £130 prop ie CARBON, as the throttle was opened the guy who was supposed to hang on panicked and let go, the

An Email from John Smith

model nosed over and chipped that expensive prop. What lesson have we here. USE RESTRAINTS LIKE IT SAYS IN THE BOOK. How many are guilty of not doing so. It says ALL models, but its good for trade!

Peter I wonder how many members will take note? That servo was a top notch HiTec so you never can tell.

Regards
John

John - Thanks very much for your Email and I'm sure this will be interesting to other members. Thanks for being kind enough to share your experiences.

News

Scotty has taken and passed his BMFA 'A' and 'B' certificates. Congratulations.

Scotty blasting skywards with his Ripmax Xcalibur

A VIEW FROM THE HEDGE. (By Will Sparrow)

Well, March certainly came in like a lion – whatever they are. We had nothing but gales and rain since this first month of spring began so, as you can imagine, there was next to no activity on the field that I noticed. Mind you, for most of the early part of the month, I'd been sitting on my twig with my back to the wind and, since the winds had been mainly from the west, I'd been looking the other way for most of the time!

Despite the rain and gales, spring has definitely arrived and the sap is rising in the hedge (not only in the hedge! – Jim Sparrow): the first green buds are starting to show and more than one bird, in these parts, has a gleam in his eye. I had a chat with the Wise Old Owl the other day – Lions are, apparently, large felines, the size of a house, that are noted for their ability to roar. Thankfully, there are none in these parts – I enquired of him if he had noticed any sap rising in his part of the hedge. He replied that, on a personal level, he was biding his time until the rain stopped as, at the moment, it was "too-wet-to-woo". He then fell into a paroxysm of laughing and nearly lost his grip on his twig. Owls are beyond me!

Occasionally, just occasionally, the gales and rain abate and throw up the sort of day that is ideal for model flying. Just such a day was delivered on a Tuesday, in the first half of the lion month. The afternoon was blessed with sunshine, light winds and a firm runway (despite all the recent rain) and, as the afternoon progressed, the weather just got better and better until, in the end, all that remained was sunshine and a firm runway. I know that you modellers are not ones to pass up a good flying opportunity, and so it came to pass that a good handful of members, drawn from the leisured classes, turned up to blow away the winter cobwebs. Some were 2015 virgins, newly emerged from hibernation, whilst a couple of others were seasoned hands who had been "out to play" before. The models were nothing special, but plenty of flying was done and all went home with satisfied grins and flat lipos! I hope that the weather gods can manage to dish up another such day, this time coinciding with a weekend, so that the workers amongst you can also go home with satisfied grins and flat lipos. I'm keeping my wings crossed in anticipation.

The following Sunday I viewed not one, but two nasty crashes – the sort that make the earth shake and small, brown birds jump on their twigs! Both crashes were apparently

A VIEW FROM THE HEDGE Continued….

caused by battery problems: in one case, the battery, although showing a normal voltage on a voltmeter, had its voltage collapse to next to nothing under load. The aeroplane discovered this whilst it was flying! I did not quite catch the other incident, but my mate, Jim Sparrow, told me (if you can trust his reportage) that the canopy of the model, which had not been fixed properly, came off in flight… and the battery was housed in the canopy. I'm glad that we sparrows do our flying on seed, grub and berry power; if I had to rely on one of those battery thingies I don't think I would ever leave my twig! A week later the battery gremlin struck again. This time the victim was one of those whirly, thrashy jellicopters; the battery somehow unplugged itself in flight and the unfortunate machine decided to go to war with the planet. The planet scored a decisive victory! I hope that is the end of your misfortunes, for a while at least. I don't want you all to run out of aeroplanes before the season gets properly underway and render the view from the hedge barren.

The 20th of the month saw the much-trailed, almost-total eclipse coincide with a super moon. There was a good deal of excitement in the hedge at the prospect of this astronomical phenomenon, (we sparrows are very close to nature, you know). Unfortunately, at the appointed hour, the sky was full of cloud and, apart from the morning becoming a little dimmer, we saw nothing. Still, we are British sparrows and, as such, are used to coping with disappointment on an almost daily basis. The Wise Old Owl tells me that the next eclipse of similar magnitude is not scheduled until 2090 so, unless you are taking live-for-ever pills, you've already missed your chance of yet another anticlimax!

As the month draws to a close, with the equinox well behind us, the weather is much kinder, and much more conducive to model flying. The days are not only longer and warmer but the winds seem lighter as March creeps out like a lamb…

WS

LiPos' in Practice

Article by Brian Holdsworth

A LiPo battery consists of several cells connected in series with an enclosing heat-shrink sleeve providing additional protection. Each cell consists of a sealed plastic bag containing a pair of electrodes separated by polyester fabric saturated with chemicals in the form of a paste. The combination generates a voltage and, when discharging, a complex series of chemical reactions occur, together with some unwanted reactions so additional chemicals are included as inhibitors or to absorb the waste products. The capacity is determined by the quantity of active chemicals. The maximum discharge current is determined by the capacity, electrode area and the rate at which the various reactions occur, with discharge at too high a rate liable to produce excessive waste products such as heat and gases causing puffing and/or loss of capacity. Charging is achieved by driving a current which reverses the chemical reactions, restoring the state of the electrodes and chemicals; this reversal is never complete so that some capacity is lost with each charge/discharge cycle. Most rechargeable chemistries are capable of thousands of cycles before significant loss of capacity (typically when 70% of specified capacity remains). LiPo's only give about a hundred cycles, but are relatively small, light and capable of high discharge currents which is why they are popular for electric flight applications.

During discharge, the cell voltage drops due to several factors. The wiring and electrodes have electrical resistance which causes a voltage drop proportional to the current; heat is generated by the product of the current squared and resistance resulting in warming; this resistance is generally low and is determined by the implementation, remaining constant for the life of the battery unless corrosion occurs. As the remaining capacity reduces during discharge, the voltage drops meaning that, unloaded, it may be used to provide an indication of the fraction of initial capacity remaining. When a current is drawn, the voltage drops - simplistically, the chemical reactions do not keep up; since voltage is given by the product of current and resistance, the effect is called Equivalent Serial Resistance (ESR) and is a critical parameter but is not constant since it varies with charge state and battery age as well as current and discharge history; it is described as "Equivalent" since no heat is generated as is the case for electrical resistance.

LiPos' in Practice continued..

Article by Brian Holdsworth

Puffing is where the battery swells; this is due to gas generation within the cell which is not adequately handled. Puffing after a flight which reduces within an hour suggests that excessive current is being drawn, or that the battery is being over-discharged - often, the battery will also be warm or even hot. There is the obvious possibility that the increasing size could cause the retaining Velcro strap in the model to slip, releasing the battery with obvious consequences; it could also be difficult to remove the battery! If sufficiently great, the outer sleeve will split, probably rupturing the cell internal structure resulting in low cell voltage; if this occurs in flight, the reduced battery voltage could shut down the Speed Controller with consequent forced landing; generally, sufficient power should still be available for the BEC to power the radio.

The specified discharge capability (C rating) has increased over the years with some batteries now claiming 60C or more - discharge at 60C would allow less than 1 minute usage which does not seem very useful for most users! Burst C ratings should be ignored since motor operation at specified C would actually exceed burst C current by a considerable margin due to the complex current waveform. Since it is suggested that peak usage should be limited to about 12C to allow reasonable flight times (> 7 minutes), there seems no great benefit in using batteries rated much over 20C. The ESR should be lower for the higher ratings giving improved performance but the difference is small for the greater cost. Many brands have increased their standard rating from 20C to 25C, though this may be marketing over reality! This suggests that batteries rated at 20C or lower are old stock and 40C or higher are more expensive than needed, leaving 25C or 30C as the best value for most users.

Monitoring charging times and using a battery meter after most flights is desirable to determine condition and flight usage. If batteries are labelled, any patterns may be identified and a failing battery disposed of before failure and any consequential effects. Most deterioration starts from first charge with previous age of little consequence; some evidence suggests that lengthy periods without use will shorten the life. As for most rechargeable batteries, charging soon after discharge seems advantageous to

LiPos' in Practice continued..

Article by Brian Holdsworth

minimise the partly charged duration.

The expected performance may be summarised. Variations in flight pattern will alter usage but, provided the battery is kept within limits, no other differences should be evident. The first charge at 1C of a new battery, effectively half-charged, should take about 30 minutes. Assuming 30% capacity remaining after flight, charging at 1C should take about 50 minutes; obviously variations in capacity remaining will affect this time accordingly. Balancing should always be active during charging, but no significant differences between cell voltages should be apparent at any time.

The battery should not be noticeably warm after flight. Some puffing after the first few cycles seems to be expected, but should be less than 15% which is barely visible; no puffing changes should be evident after flight. After about 30 cycles, the ESR may begin to increase which, together with the reducing capacity, will reduce the capacity remaining after flight, due to the need for a throttle increase to maintain power output, but with no other obvious differences in flight performance; a small increase in charging time may occur due to the associated reduction in charging efficiency but should still complete within an hour. After about 100 cycles, the capacity remaining after flight may have reduced to leave less than 10% suggesting end of useful life and disposal.

Practical experience suggests that quality control is poor with significant variations evident between batteries of the same brand, age and usage. Some brands claim to match cells but no evidence is apparent - perhaps this only applies to the batteries supplied to their sponsored users?

"Premium" batteries do not seem to demonstrate sufficient improvement to justify their higher cost - some have failed after only a few cycles! Commonly, variations between cells become evident early in the battery life; if overheating was the cause, it would be expected to affect the inner cells most since they are insulated by the outer cells; if mechanical damage, this should affect the outer cells most; however, no pattern is apparent.

Where several batteries are activated at the same time with equal usage, any variations between them may be assumed to be due to manufacturing

LiPos' in Practice continued..

Article by Brian Holdsworth

variations. Inevitably, batteries with higher cell counts are likely to show problems in multiple cells. The following have been observed, with some batteries exhibiting multiple problems.

Slow first charge (an hour or more) with one cell lower than the others, emphasising the need for balancing on every charge; improves over a few cycles to normal charging. This seems quite common but, if improvement does not occur, early disposal is inevitable!

After maybe 20 cycles, significant puffing over a few cycles but with no immediate effect on charging or performance. If the puffing continues to increase, disposal!

After maybe 30 cycles, becomes increasingly slow to charge with a cell lower than the others, requiring balancing; the battery is not necessarily one of those slow on first charge. The time increases until, after maybe 40 cycles, the charger times out after two hours suggesting that the cell is unable to reach the fully charged state. Perhaps due to relatively light usage, in-flight performance shows little degradation for many more cycles. This seems to affect most batteries.

After flight, a meter warns of an unbalanced battery with one cell lower than the others. This recovers until, after maybe half an hour, the battery is within balance limits. Since, some time is taken for approach, landing and retrieval after closing the throttle, the cell voltage must have been significantly lower in flight. This worsens over a few cycles until flight performance becomes noticeably worse suggesting disposal.

Less than a minute after take-off, the speed controller shuts down with resultant forced landing. A battery meter shows that one cell is very low - disposal resulted! The startup fanfare from the speed controller may indicate the wrong cell count and so is worth checking before flight; it seems doubtful that telemetry would give sufficient indication to avoid the shutdown.

Early in a flight it becomes evident that more throttle is needed than usual, provoking an early landing. Checking with a meter shows reasonable capacity and balancing. This suggests an increase in ESR, perhaps due to time degradation,

LiPos' in Practice continued..

Article by Brian Holdsworth

which is a recognised problem for most rechargeable chemistries and, unfortunately, is unpredictable in onset. Disposal is inevitable.

On resuming after a winter layoff, some behaved poorly with remaining capacity below 25% after flight, but with a lower than expected capacity returned by the charger. Over a few cycles they recovered to the previous 45% remaining with improved flight performance. This seems to confirm that batteries dislike being left unused!

Maybe 2 years after first charge, charging times increase over a few cycles, with one or more low cells; performance deteriorates as indicated by reducing capacity remaining suggesting time degradation as above.

As an experiment, one set of 4 batteries was discharged to the 50% storage level, as some recommend when unused over the winter; this seemed somewhat contradictory, but curiosity overcame prejudice! They then charged and performed normally but, within a few cycles, all puffed and their charging times increased until the charger started timing out. Since they continued puffing towards a circular cross-section and would no longer fit, disposal occurred! While this was a small trial of debatable significance, there are no plans to repeat.

Perhaps emphasising the variations in performance, one battery (sole example of a brand) was slow on initial charge but stabilised and has shown no other degradation over several years usage. However, its performance is poorer than the others as indicated by its lower capacity remaining after flight. But it has not puffed, is balanced and charges in about an hour suggesting that some usable life remains.

Protocol Problems - and How they can affect You.

Article by John Higgins

As you probably remember from reading Brian's article in last month's "Flier", since the start of 2015 the good old EU has tightened up on the regulations regarding 2.4 GHz transmissions. This affects the way in which our radio gear uses the available channels on the 2.4 GHz band. Now, before you say "So what?" and reach for the remote let me tell you a tale of woe.

The other day I had had three or four nice flights with my SBach 50E and was about to have another when the pre-flight check revealed controls that were "sticky" in action. The controls would not follow the stick movements smoothly but would move jerkily and with a delay of a second or two. Needless to say, the model was not flown further and I retired home to investigate and do a bit of head scratching.

Now, I use Futaba radio. My Transmitter is an 18 MZ and most of my models use Futaba Fasst or Fasstest receivers – this model, however, has a FrSky TFR8S, Fasst-compatible receiver, which has always worked perfectly. (I always check new receivers out in an old I-don't-mind-if-it-crashes model before they get anywhere near a "nice" model.) So what's changed?

A week or so ago I updated my transmitter's software to the latest 2.5 version. This version includes the latest protocols. It transpires that, although Futaba receivers work as they always did, this is not necessarily true of receivers from other manufacturers which are Fasst-compatible.
I rang the Futaba service department at Ripmax and they were aware of the problem but were only concerned with Futaba equipment and saw no need to flag up problems with equipment from other manufacturers. From a commercial point of view they have a point, but morally, given the safety implications, I'm not so sure.

I rang T9 Hobbysport – the main dealer for FrSky. They were aware of the problem and thought that there was a firmware fix available but were unable to say how this could be implemented. (There are links on the FrSky website, but they won't open). I sent an email to T9, at their request, to act as a reminder for them to chase this matter up (!). I also pointed out that if such problems are known, then they should be publicised and not left for modellers to find out the hard way.

My Sea Fury has one of these receivers, and now exhibits the same symptoms as the SBach. All my other models, equipped with Futaba receivers, work perfectly.

Do we really need yet another way to crash our models? If you are using a "clone" receiver with a Futaba transmitter, please, beware.

I spoke to T9 Hobby Sport after reading John's article above - they said that it can affect the Taranis but not JR - Ed.

Un boxing Clever

March 2015

Article by John Higgins

We all appreciate that the internet is a superb technological resource and that modern communications systems are far in advance of what we would have marvelled at on Star Trek just a very few years ago. So why does the banal dominate such wonders? (The answer is “because we can…”) If you need convincing, just think of all the snippets of mobile phone conversations that you must have witnessed as you walked down the high street or browsed the aisles of Tesco. Is “banal” too strong a word? What about the majority of all those “Tweets”?

The latest banal fad is called “Unboxing”. The video clips show people unpacking parcels and opening boxes; the range is phenomenal – from air-headed girls opening boxes labelled “Louis Vuitton” (whoever he is!) to reveal hideous handbags, which then sends them into spasms of delight, to toddlers opening the box of the latest plastic toy. Apparently, watching other people opening boxes enables the watchers to share in their joy and, as a result, provides them with the sort of satisfaction that nullifies their desire to open a similar box themselves and so suppresses the consumer instinct. Now this set me thinking. Models, for the most part, come in large, shiny boxes and we all like large, shiny boxes. Right? Many of us have too many models as it is… but we do like large shiny boxes. I know that “The Flier” is read by many wives and significant others, so, if you find that your other half is encouraging you to watch a clip of the latest Hangar 9 masterpiece being unboxed…

A Bit More Nostalgia

From the archives of John Prothero

Scene at the Field

March 2015

Justin brought two interesting models - this petrol powered Venus 11 and the Hobby King Gyrocopter - both flew well.

Tony gently wafting around the sky with his Goblin 700

Jim's MX2 now electric powered.

Christopher on his way to an excellent flight assisted by Jason - nice model.

Nice flared out landing (his Dad, Darren, is a full size pilot)

Scotty on a fast fly past - it's a very impressive performer - I've watched Dave fly his and I can see why Ripmax say that it's such a popular model.

Social Evening

Wednesday 1st April Dave Swarbrick will be giving a talk on the BMFA 'A' and 'B' certificate.

Wednesday 6th May Jason Reid will be giving a talk on Field Safety.

Shows for 2015

LMA

East Kirkby Model Show	1st - 4th May
Strathaven Model Show	26th - 28th June
Cosford Model Show	18th - 19th July
Elvington Model Show	8th - 9th August

Other Shows

Weston Park International Model Airshow 19th - 21st June

Wrexham MAC are running a relaxed scale competition 10th - 12th April. I have the info on this - please drop me an email to p.cathrow@sky.com and I'll send it to you.

IF ANY OF YOU HAVE INFO OF ANY OTHER MODEL SHOWS WHICH I HAVEN'T LISTED ABOVE, PLEASE LET ME KNOW AND I'll PUT IT IN.

In Conclusion

Yesterday really lived up to it's name - Sun day. It was a really nice Spring day and the field was full of Club members enjoying their hobby.

Everything was there from an autogyro which Justin flew surprisingly well. He said that it isn't easy to fly but what he did with it was impressive. I've seen these models on the HobbyKing web site but it was the first time I've seen one in the flesh.

There were a couple of the Ripmax warbirds, a Mustang and Spitfire. Why did Ripmax cease to market that range - they look so good in the air.

It's time to close. Let's look forward to the more settled weather - this year I intend to make more time for flying.

Do come to Dave's talk on the 'A' & 'B' tests. Thanks to Brian Holdsworth, John Higgins, Dave Swarbrick, John Smith, John Prothero and the never to be forgotten Will Sparrow for your contributions to this newsletter. See you at the field.

Happy flying.