



The Flightline



Volume 35, Issue3

Newsletter of the Propstoppers RC Club

AMA 1042

Mar 2005

President's Message

Unfortunately I was out of town on business during last month's meeting, but I heard the auction went very well, a special thanks to Al Tamburro as well as those of you that assisted to make the auction a success.

Just as a reminder, we have an upcoming indoor FunFly at the Tincum School, Friday March 4th starting at 7pm and concluding at 9pm.

Now onto the big issue at hand, a new club field. It appears that many of you are doing your best keeping your eyes and ears open as we do have a number of sites that need further pursuing. Unfortunately we still do not have a team pulled together to start this effort. Therefore this effort will continue to be on an individual basis until such time we can get enough members to volunteer to form this team. It is my hope that we will be able to get a small team, say 5 members who can spare some time from their busy schedules, who will champion this effort with help of the club membership when called upon. It would be really great if we could have a new field secured for the upcoming flying season.

As always, if anyone has suggestions and/or questions, please feel free to contact me.

Steven Boyajian, President

Editorial: Field Search Elements

There are a number of elements beginning to build in our search for a new club. First, there have been a number of potential sites that have been suggested for various reasons and we should begin to organize these for future action. Among them are;

- The Williamson School
- Elwyn Institute
- Delaware County Prison
- Camp Sunshine in Thornbury Township
- Ridley Creek State Park
- A gun club on Fox Road in Media
- Linville Farm
- Fields between Granite Run Mall and Penncrest HS
- Field opposite the Sun Center
- Field adjacent to the old Nike site in Edgemont
- Field across from the CountryDeli on Rt. 352

In addition I have solicited members with comfy chairs and web connections to search via aerial photos of the county. I posted the methodology to the club news group but if you didn't get them they are as follows;

First log onto terraserver; www.terraserver.com Then select Search from the menu at the top. I suggest you first try Media, PA and I selected the aerial photos from GlobeXplorer. You will then see an aerial view of Media.

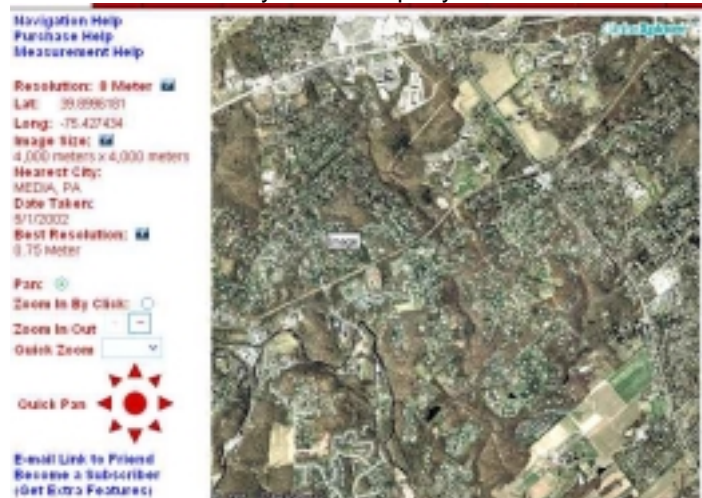
On the lower left you will see a compass rose. Click on the arrow to steer you to the spot you want to see.

*Agenda for March 1st Meeting
Marple Newtown Library, 7:30 pm*

- Approval of February meeting minutes
- Membership Report
- Finance Report
- Flying Field Issues
- Lebanon Flea Market Plans
- Show and Tell

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I suggest you navigate down Rt. 352 until you see the Knowlton Rd. intersection and follow it to Moore Field. This will give you some idea how big a site we need. The image above does not go quite that far. At the top is Granite Run Mall, Rt. 352 runs down the right hand side of the picture. Near the bottom you will see Knowlton Road and the top end

Continued on page 2

Calendar of Events

Club Meetings

Regular Meeting 7:30 pm
Tuesday 1st March 2005
Marple Newtown Library

Tuesday Breakfast Meeting
The Country Deli, Rt. 352 Glenn Mills
9 till 10 am. Just show up.
Flying afterwards, weather permitting

Flying Events

Indoor Flying at Tinicum School 7 – 9pm
Friday 4th March

Non Flying Events

Central Penn Modelers Flea Market
Saturday 12th March, Lebanon, PA
Join the caravan, Granite Run Mall
parking lot, next to (Boston Market?)
7:30 am, make arrangements at the
club meeting.

Regular Club Flying

At Christian Academy
Weekdays after school; 3pm till dusk
Saturday 10 am till dusk
Sunday, after Church; 12 pm till dusk

Note; Flying must be done in accordance with the agreement forged by Vice President Dick Seiwel. Specifically, only electric powered airplanes. Beginners using due caution and respecting club rules may fly GWS Slow Stick without instructors.

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Propstoppers Web Site; www.propstoppers.org
Check the web site for back issues of the newsletter, pictures of club events and the calendar of future events.

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Minutes of the Propstoppers Model Airplane Club February 1st, 2005 at the Marple Newtown library

Vice President Dick Seiwel called the meeting to order at 7:00 p.m.

A roll call by membership chairman Ray Wopatek showed 30 members present.

The minutes of the January meeting as published in the newsletter were accepted by the membership.

The treasurer's report was presented by Treasurer Jim Barrow and accepted by the membership.

Old Business:

The vice president continued the discussion about our club field search. Several possibilities were mentioned and are being pursued.

The meeting was adjourned at 7:30 p.m. in favor of the club auction.

Club Auction:

Al Tamburro did a great auctioneering and entertaining job running the annual club auction. A number of items from free flight planes to heavy tools were sold for the benefit of the club.

Richard Bartkowski, Secretary

Field Search Elements Continued from page 1

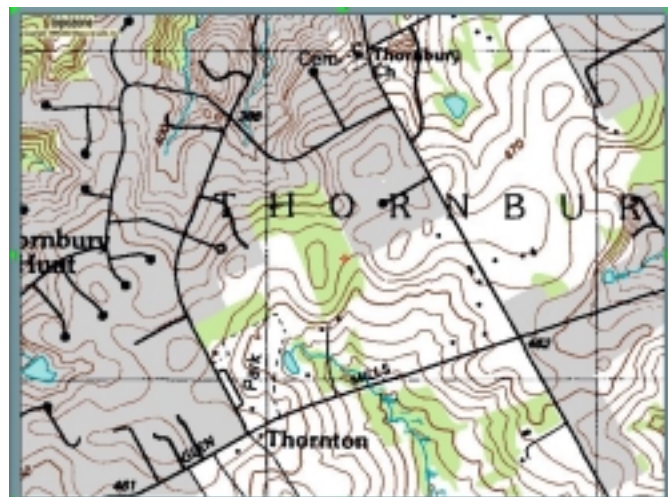
of Moore Field.

Now, if you want to capture the image from this page hit Alt and Print Screen keys at the same time. This will put an image of your web page on the clipboard. Now open your favorite photo editor and select paste, or new-from-clipboard and the picture will appear in your photo editor.

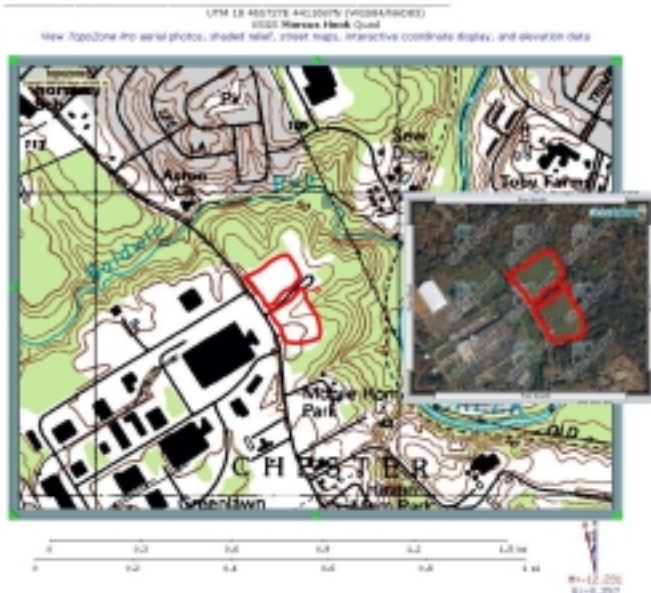
I suggest you then crop out the extraneous stuff so just the aerial picture remains. You may want to crop it further to the area just around the field.

Now what you do, if you have a candidate in your picture, such as the Williamson School;

Open Topozone; www.topozone.com and navigate to the same place as your aerial picture. You will then have a contour map of the area so you can see just how flat it is. Then do the Alt / Print Screen - paste actions with the contour map and crop it too. Here is the area that contains Thornbury Park.



If you Open a "new graphic" in your photo editing program in a third window, you can first copy and paste the aerial photo then alongside it paste the contour map. Highlight one or the other and grab the corner handle and resize it so the scales match. You do this by making the distance between two identifiable points the same in both images, for instance, the distance between Knowlton road and Dutton Mill road. Then select combine all objects, or the equivalent in your program and crop the whole thing and you have a neat graphic of a potential field. All you do then is to save-as a .jpg file and give it a name and you are set. Here is an example of the Sun Center potential field found by Dick Seiwel.



If you compare the area of these fields you will see that they are way smaller than Moore unless we got permission to remove the tree line between the two smaller fields. Otherwise this location is quite good as there are woods between the field and the nearest houses. This is also the advantage of doing this kind of search as just driving around you may not see the million dollar homes just on the other side of a tree line.

Below is the same graphic for the Christian Academy field with Moore field in the background that I showed the other month. Note that the Christian Academy field is about the same size as Moore.

But wait, if you have really found a good one why not paste it to the Propstoppers Yahoo Group Photos area; <http://photos.groups.yahoo.com/group/propstoppers/> and put it in the Potential Fields folder and then tell us about it. Have a look at what is already there.

About half the club members have web access and I know how much time most people spend looking for good stuff on their PC's so we should be able to cover the whole county in a matter of a couple of weeks. Maybe we will have the whole job done by the next meeting and we can move on the task of examining the promising candidates.

These tasks involve several steps. First an on-site examination where we may find factors that would otherwise rule out the candidate, or we may find elements that would suggest just how a field might be placed and access provided for the club.

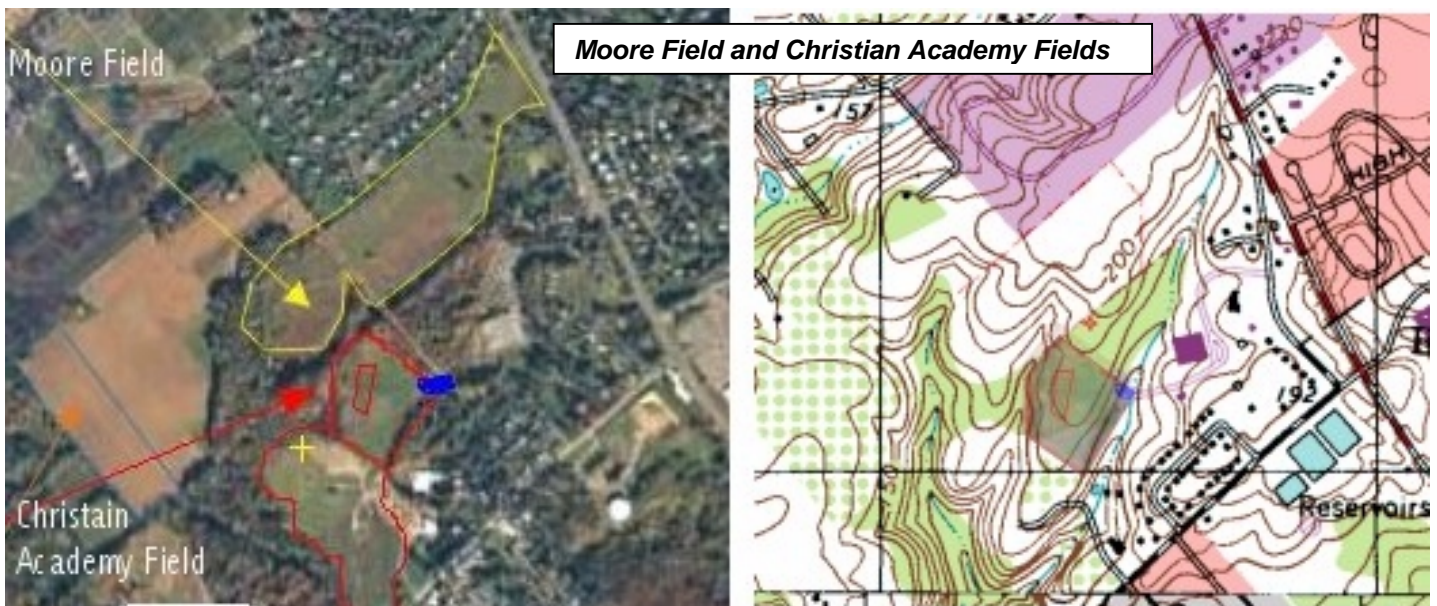
The second step, given encouragement on the first one, would be to poll the membership to see who has some contact with the owners or operators of the site.

The third step is to put together the solicitation package suggested by Steve Boyajian and Dick Seiwel. However, if we have found a solid candidate the package should be enhanced with the material suggesting what piece of the property interests us and how we propose to use it.

But I am getting ahead of myself. The missing element in our so-called field search program is an individual willing to coordinate these efforts. So, how about it? By the March meeting we may have a whole passel of viable potential fields to work with and a number of members who have already put in some time in the preliminary search. Can you help move it to the next step?

Meanwhile there are other opportunities. Perhaps we should approach some of the other local clubs to see if we could arrange a membership that would provide some kind of access for our members while we are diligently looking for our own site.

Dave Harding



Explosive LiPolys?? A discussion from Eflight

I understand from Hobby Lobby's technical director LA Johnson that over one million LiPoly batteries are now in the hands of the aeromodeling community. Recently there was a discussion of LiPoly battery fire hazards on the Eflight list serve www.ezonemag.com. Here is a sample of messages on the subject.

What does it take to explode/burn a Lipoly? Today I shot two 2200 mah Predators (Kirks ware) with my 22 pistol 5 or so times with no discernable (other than holes/deformation) in an effort to create some excitement. One cell had been in a bad crash and was 'puffy'; the other had lost those miserable aluminum tabs in futile soldering attempts. I left them under a concrete tile in the desert where I'll check them in a week or so.

Two gun Ted in AZ

They need to be grounded, hold it in one hand while you shoot with the other...

Simon

I have not had any luck either. I've been testing FMA Kokams. I really wanted to see first hand what would happen. Had a couple (750 mAh) I had managed to puff up a bit by the wrong test equipment setting. Connected to a 500 mA source and let them run for 36 hrs - NADA, just puffed up a bit more and lay there. Tried another by shorting out the terminals after it was discharged down to 2.7 volts. It didn't do anything exciting either. The next time I have some to sacrifice I'll discharge them in mineral oil to see if there is a lot of gassing indicated by any bubbles. This is not to lessen the threat posed by lithium cells if improperly used - I still only charge them when I'm present in the immediate area.

Red S.

Red's R/C Battery Clinic

I've had one of mine (fully charged) short out on something inside my plastic flight box...I know, dumb! dumb! dumb!!!! All I saw was a horrendous amount of thick gray smoke rolling out of the box and the battery puff up severely. No explosion,....no firenada... The heat generated melted the tray the battery was sitting on and a lot of soot was deposited throughout the closed box... in case anyone interprets this message as otherwise, this was a dumb user error...NOT a lipo malfunction.

John Likak

There was a video posted on one of the Ezone forums showing a LiPo pack going off. (Steve Boyajian posted it to the Propstoppers Group page. Ed.) From what I could glean, it seems the maker of the video intentionally plugged the pack into a conventional non-LiPo charger, and then cranked up the input amps. It took a few minutes to get the pack smoking, and then another minute or two before it detonated (burned actually, no detonation. Ed.) If that video is any indication, it seems the key to getting a LiPo pack to explode is charging it at too high a voltage or with an excessive amps input.

Disclaimer: My best guesses. I speak from near-complete ignorance on LiPo chemistry, physics, and electrodynamics.

JL

I hope we get more of these first hand accounts. We seen enough of those "I know a guy that knew a guy that knew a guy that" "Maybe we can get a handle on the hazards.

We need also some feedback on experiences regarding cycle life, how long you have been using a given pack and how it is holding up over time. Discharge rates, charge techniques (charger used), etc. When a pack did finally give up what were the indications?

Red S.

So far, I've had one pack go south. A 2-cell 1500 Kokam, first generation. Charged only with the FMA LiPo charger, never discharged below 3V/cell. Discharged at 8.1 amps (flown only in a GWS A-10). After about 20 flights, performance started falling off, flights got shorter, and pack temperature at the end of a flight began increasing. Full-charge voltage began sagging at the same time. After another 10 flights or so, the pack's fresh-charge voltage was barely enough to maintain level flight. It has been retired, but I still have it and would be willing to donate it to scientific research. (This current level exceeds the capability of first generation LiPoly Kokams; Rusty Neithammer has had similar results. Ed.)

John Likak

The easiest way (to make them burn) is to charge them with a NiCd charger.

I crashed a plane with a 6s3p pack made of six 3-cell 1500 packs. The Kokam packs were damaged considerably, looking like a spread-out deck of cards. However, they did not catch fire. So, I took them home and tried to destroy them. Shorted the leads. This just melted the solder and burned the wire insulation - just like a NiCd pack. Drove a nail through - Some things got hot, but no fire. Used a Tekin NiCd peak charger at 2A. Swelled up and caught fire. There appeared to be 3 flare-ups, one per cell. Drilled through a pack with a 1/4-inch drill. The sparking ruined the drill, but nothing caught fire. Put in my fireplace and started a fire. Made a "whoosh" flame as each cell caught fire. (The fireplace has a screen and doors, and is pretty good size).

In other words, I have found it difficult to get them to burn unless you use the wrong charger.

Mike Norton

I had a small Lipoly pack explode on my desk last week. I had started the charge here at the desk while doing computer work, as I usually do, since I simply don't have time or inclination to sit for hours in any other place and watch my battery packs charge. After quite a period of working next to the charger and seeing no problem, no sign of pack inflation, I got distracted and thought of a task I should do out in my shop in back. So I got up and went out there, and I was soldering, so didn't smell anything unusual. I was out there probably ten minutes. When I came back in, I immediately noticed a strong smoke smell, and sure enough, the pack had burned on my desk. It burned a large charred spot in the surface of the desk and it melted the side off my new laptop computer sitting 6" away. There was a great deal of smoke in the air and lots of ash and soot all over everything. I was lucky. There were no papers nearby, or the house would have been on fire. The computer still works; the part that was damaged was nearly the only place on its surface where the damage didn't harm any functional parts. The next morning, after airing out the place and cleaning up, I checked the charger, and sure enough, I had set it for 11.1 volts rather than for 7.2 volts. I

was concerned about setting the amp level correctly, and I didn't take sufficient care with the voltage. I thought it was right.

My conclusions:

(1) Don't be casual about charging LiPolys. They CAN do damage. When you use LiPolys, you are out on the risky edge of technology, and this technology is nowhere near ready for general consumer use. If I had remained at my desk where the charging was taking place, based on past experience, I'd have seen the pack start to inflate, and I'd have had plenty of time to respond appropriately, but I was way too casual.

(2) Making this kind of error should not put your house at risk of burning down. As long as you are gambling on a major house or car fire to use LiPolys, you are taking more risk than you're used to taking with most other gadgets that you play with.

I'll probably continue to use LiPolys, but I will be filled with a healthy and realistic sense of danger as I do it.

Dick Hatch

Dick, this is not aimed at you, but your story will help support my points. Even with due care and attention, mistakes can happen. The consequences of which could be devastating. I wonder, what IS the mindset of those who wish to diminish or ignore those in the know that have been very candid about the dangers associated with Li-xx. Why can't folks just believe, and adhere to the warnings? I'm not saying avoid using this technology, far from it. But hells bells, what's it going to take to get people to follow instructions?

It's noteworthy that this thread is moving towards disregarding the danger by looking for evidence to support that nails, heat, shorting, etc will not produce the fireworks "everyone" (I hope) is aware of. Why is this? You got lucky...what does this prove? The cell specifications, as well as the instructions explicitly state to avoid doing precisely these acts of destruction. Other than the thrill factor (which I can't deny), what's the point of trying to make them vent with flame?

Dick's statement indicating this technology is "not" ready for the masses is accurate, as evident by this thread. Let's not add confusion in Joe-Blow's mind by muddying the definition of "dangerous".

Even though getting a violent reaction is sometimes difficult to replicate it can happen when it is most inconvenient. One has to be very careful with these critters, as they will bite you if given half a chance.

Even in commercial applications where there is built in protection against over charge/over discharge there have been reported incidents so it can happen.

I always charge mine out of the plane and in a glass baking-dish. While I have created some silver sausages from screw-ups in setting the charger I have not had a fire Nor do I want one.

I use a large coffee mug for my Lipo charging. If anything bad should happen, the flare-up is contained and directed upwards.

Ed

I hope people don't take our difficulty in trying to make them into mini volcanoes to heart as relieving them from any risk. Like volcanoes, these appear to be somewhat

unpredictable.

We can go back and relate a number of Ni-Cd and Ni-Mh horror stories resulting from hard shorts or failure to terminate fast charge. No matter what, we are dealing energy sources that under certain circumstances can be a hazard unless proper precautions are taken.

Red S.

I can remember a lot of problems regarding exploding NiCds back in the 70s. As a matter of fact I blew up a pack of GP 3300s recently. Still not sure exactly what I did wrong, but the fire and smoke really didn't care! My point: any time you are dealing with an energy source you need to be careful!

Walt

The exploding scenario in Ni-Cd and Ni-Mh is well defined. In cases of severe overcharge at high rates, due to the heat generated in the recombination of the oxygen generated, the separator melts down to the point where the fully charged plates contact each other (hard short). In this case the energy in the cell then dumps and we have what is referred to as a hot steamer, the electrolyte boils, the melted nylon that was the separator and is forced by the steam through the vent. On some occasions the vent is clogged by the molten nylon separator and becomes inoperative causing the cell to rapidly disassemble at around 350 psi.

The other scenario is when a cell is driven into reverse, hydrogen is generated. Continued reversal causes the cell to swell (noted at the end of the can) to the point where internal electric contact is broken or the plates come in contact at the pressure points causing a spark, which ignites the hydrogen in the oxygen rich atmosphere in the cell, and you have a hydrogen explosion. A more likely hazard is venting of caustic electrolyte and hydrogen gas where an explosion can be initiated by any spark (motor brush arcing) if the hydrogen is not dispersed. This situation is much more rare than the overcharge situation discussed above.

The scenario in lithium explosions has not yet been revealed in this detail. What gases are generated to cause the cell rupture and subsequent burning that has been observed?

Red S.

I am considering a charger upgrade, and I would be interested in hearing your experience with the units that are supposed to auto-detect. If a unit successfully auto-detects MOST of the time, and if I set the switches correctly MOST of the time, then I've reduced the probability of catastrophe to a pretty small level. I get catastrophe only if both the auto detection system and I make a mistake at the same time. That sounds like a good improvement.

Dick Hatch

The Astro 109 is supposed to detect the right cell count. And doesMOST of the time. I was able to make it miscount by connection to a pack that was nearly fully charged and I had not turned down the current adjustment like you are suppose to when you start charging.

The Astro Flight 109 auto detects cell count, but does require the user to set current. Set the current too high and you can get a fire. I have a second hand report

of a local guy who did just that and burned down his house! This report is from his flying buddy. (guy who know a guy!)

Doug Ingraham (Doug is the designer of the Astro chargers. Ed.)

The Orbit chargers auto detect (applies from v6.3 which is current software version) but does not start charge before the user confirm/correct LiPo cell count. www.orbitronic.de I have two Pro's and they work very well and have not detected wrong counts yet.

Haldor

I have a Triton charger and I know from my own experience that it will refuse to charge if I set the voltage too high. I haven't tried it, but it is possible for me to set the current too high. I don't know if this would start a fire though, since the voltage cutoff should still work. I also have a temperature probe for it and it will shut off if the temp goes to high. But, it is a multi battery type charger and I'm sure if I charged a Li-Poly in NiCd mode I could have problems. It's my hope, and backup, that the temp probe will shut the charger down if I set it wrong.

The Apache Li-Poly-only chargers are supposed to have auto detect capability. (Except for the very early ones) I have two of these, but I've never tried to test their error detect functions. (The one I have uses jumpers for you to set the number of cells and charge rate. You could put the jumper on the wrong pin! Ed.)

Nick

There was a special symposium on LiPo published in Electrochimica Acta last fall (700 pp.). I'll check if any papers mention failure modes. Most of the LiPo we use pass the nail penetration and over-charge tests without catastrophic failure as individual cells. When we assemble them in 3S and more packs and abuse them with high discharge rates, the failure rate seems to skyrocket. Some of the Chinese cells should not have passed quality control and are burning up even in cell phones. It may be that the QC rejects are re-entering the market through illegal channels.

Rick.

If anyone doubts that LiPo might burn, Hoppy has compiled close to 90 incidents on RCGroups.

<http://www.rcgroups.com/forums/showthread.php?t=20918>

7 That may seem like a lot, but there are probably 10's of thousands of LiPo cells (actually over one million in the aeromodeling hobby. Ed.) now being used by the 50,000 members. A fire every one in a thousand users isn't a particularly safe consumer product however. There are also some videos of burning after deliberate overcharge that are spectacular. Accidental overcharge is the most common cause of failure --otherwise known as operator error. The batteries with separate charge and discharge plugs (like Tower Hobbies sells) are a good way to separate LiPo from your nickel batteries but that also requires a smart, dedicated LiPo charger and not a multi-mode. Thermal probes and safety guards are good belt and suspender approaches too.

<https://www.fmadirect.com/site/detail.htm?item=1780§ion=28>

Rick.

There is one way I know of that will always work (cause a fire). Put the pack on a NiCd charger and set the current to 1C or higher. Now wait. If the pack or cell was fully

charged it wont take too long. Another way that probably will work is to take a fully charged pack or cell and short the outputs. I say probably because it is possible that instead of "Venting with flame" it might just de-solder the wires or the internal wiring might open up like a fuse. I know of one event where someone got a new pack in the mail and they cut off the connector by clipping both wires at the same time. This was enough to cause one of the cells to fail internally and the whole thing took off in just a few seconds. (This is one of those mistakes that apply to all batteries; usually you only do it once to learn! Ed.) The only thing lost in this case was the pack because he was able to toss it outside into his front yard. If the cells are discharged there is not much chance of an event occurring. When charged there is considerable energy stored in the chemistry and this is where the most danger is.

So there you have it, wonderful technology for the hobby but, like most things; sharp knives, spinning props, hot mufflers/soldering irons/covering irons, CA fumes etc.; there are hazards and understanding the rules and following them is necessary for safety.

- **Use the correct LiPoly charger**
- **Ensure the settings are right and double check**
- **Check that the automatic charger is doing the right thing. (Correct cell-count and current)**
- **Charge the battery in a fireproof container;**
 - **Metal can**
 - **Ceramic of glass covered dish**
- **Remove damaged cells from the model and store in a fireproof container (take one to the field just in case? Mason jar maybe?)**

One more factor you should be aware of in buying LiPoly cells and batteries. The technology has been improving at an incredible rate, such that we are now able to buy fourth generation cells, just three years after the first cells were available to the hobby. The primary thing you should know is that the early cells were only capable of yielding a low current; way lower than the comparable capacity Nicad or NiMh cell.

The current capability of a cell is usually expressed in terms of multiples of its capacity, known as C.

i.e. A 1000 mili amp hour cell holds 1 amp hour of charge, so C is one.

The early LiPoly cells were only capable of yielding 3 x C current levels, so our 1000 mili amp hour cell could deliver only 3 amps. Ok for our Lite Sticks but marginal for a Speed 280 and totally inadequate for a Speed 400 of any kind.

The latest cells from the leading suppliers such as Kokam, Thunder Tiger and E-tec are capable of 10 C, so a 1000 mah cell would be capable of sustaining 10 amps; fine for any motor up to a hot Speed 400. Some recent cells are good for 15C although we are finding that these cells are heavier than the earlier cells.

When you get advanced in using this technology you find that even higher currents for the bigger motors are achieved by connecting two or more identical batteries in parallel. Parallel two 10 C 1000 mah cells and

you can pull 20 amps, and, oh by the way, you now have a battery that has two times 1000 mah, or 2000 mah, with the attendant increase in run times.

Run time in minutes is C times 60 divided by motor amps.

Anyway, my point here is **Buyer Beware**; there are all kinds of people selling LiPoly cells and batteries to us. Many of them, including some otherwise reputable battery dealers, don't even tell you what the current capacity is. So, buy from a reputable LiPoly supplier or be prepared to be disappointed when your new battery puffs up to a *silver sausage* after the first flight because it couldn't handle the current.

Dave Harding

The Ohlsson 60 Ignition Engine

The Ohlsson 60 ignition engine, built by Ohlsson and Rice from 1940 through 1950 was one of the most successful engines of the pre-glow era. It continues to be very popular, not only with collectors but also with flyers of Old Timer models. Here are two of your editor's Ohlsson powered models in competition.

Below is the Lanzo Bomber Classic Texaco that uses the pre-war engine (below on the left) here fitted with a recent Cox carburetor to allow finer adjustment for the economy required of this event. On the right is the Trenton Terror fitted with the post-war engine (on the right). Dick Bartkowski and I are preparing for the first flight in the Ohlsson Side Port event. Lots of fun! Dave



Lanzo Bomber Classic Texaco with Pre-war Ohlsson 60



Pre-war and Post-war Ohlsson 60 spark ignition engines

Lebanon Flea Market Trip?

CENTRAL PENN AEROMODELERS ASSOC. 25th Annual Radio Control FLEA MARKET

Date: Saturday, March 12, 2005
(Regardless of weather)



TIME:

9am - Gen. Admission
7am - Space Renters Only

Info...Call Darryl (717) 960-8170

Admission: \$.700 Donation (Under 12 Free)

Aisle Spaces: \$10.00 each (5 ft. long)

Wall Spaces: \$14.00 each (5 ft. long)

Place: LEBANON FAIRGROUNDS

Intersection of Cornwall Road
and Rocherty Road, Lebanon, PA

Call for
Map

I assume that the Propstoppers will follow their practice of many years and car pool and convoy to the Central Penn Modelers annual flea market. We usually meet in the Granite Run Mall parking lot near (Boston Market?) so we can leave at 7:30. It is also our custom to stop for an excellent Chester County breakfast near the fairgrounds. So, let's get organized at the March meeting.

Dave Harding

Trenton Terror Ohlsson Sideport competitor with Post-war Ohlsson 60 at Muncie



Dave Harding – Editor
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Propstoppers R.C. M.A.C



Shootout in the desert at High Noon?
 Spirit of SAM competitors at the Southwest Regionals in Eloy Arizona, January 2005
 Back Row Standing from to left right: Phil Pearce (*Triangle Sportster*), Dave Harding (*Jack North Wakefield*), Luther Peters (*Chieftain*), Jack Hiner (*Red Flash*), & Cal Ettel (*Jabberwock*). Kneeling in from left to right: John Richards (*Korda*), Eut Tileston (*Pusher Pursuit*) & Robin Bithel (*Pacific Ace*). Phil Pearce was first, Dave Harding was second and Cal Ettel was third.
 Perfect weather for the event, mild temperatures, low humidity, warm sun, and light winds.

The Last Propstoppers Indoor Meet of the Season.

Friday 4th March at the Tinicum School in Tinicum.
 7 pm till 9 pm.
 Join us to fly or just watch.

WRAMS Show Trip, Saturday 26th February

Couple of seats left in Dave's van.
 Leave Brookhaven at 7:30 am, return by about 8 pm
 Call me ASAP 610-872-1457

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 Wed, Sun Closed

1918 Zebley Road
 Wilmington, De
 Call for Directions
 (302) 475-8812

Membership Renewal For 2005

Membership renewal for 2005 is now due.
 You can renew by mail or at the club meeting in March.

Dues are \$60.

Ray Wopatek
 1004 Green Lane
 Secane, PA. 9018

Please enclose a **copy** of your current
 A. M. A. Membership card,
 And Please, Please enclose a
Stamped self-addressed envelope.

Ray Wopatek Membership Chairman