



The Gold Country Flyer

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The Meeting : Was held on July 7th at the normal meeting place , Amador County offices at 7pm with just 18 members present . Jim Moore opened the meeting with a discussion of several items including the Float Flying site at Wrinkle Cove , New Hogan Reservoir. Earlier Wrinkle Cove was closed to flyers due to abuse by some users leaving trash doing donuts and other off-road activities . So , as of right now , it is open again . There is usually a gathering of flyers there on Thursday Morning to Float Fly. If you haven't tried float flying go and take a look. **Vice President's Report :** In keeping with a well-established tradition , there was nothing to report. **Treasurer's Report :** The club treasury has remained relatively static over the last month and we're doing okay. Alan Ross also mowed the field again and we all appreciate it but may not always recognize it. Thank you Alan ! The runway sealing which is up in the air , I got a call on a Saturday morning that Rob Andre had extra sealer and could do the runway at that time. With so little notice and the fact I had to be somewhere else , it did not get done. Hopefully it will get done this month. **Adopt-a-Highway** will be held on Saturday , August 20th at either 8am or 9am , whichever time most of the help would like and believe me , I need the help. The reason for the early hours is the heat . The Fire extinguisher has been used and needs to be re-charged and is being taken care of.

Show and Tell: John Stoney explain the operation of his Maxfield Curtiss Pusher. John, better you flying it than me. D.B.



Swap Meet : Will be held on August 13th . Be there early to get the good Stuff . Tom Minger is in charge of the event and I'm sure there will be another notice before the event.

Clarification of 400 foot ceiling. This is just a review of the 400 foot ruling that most of us thought was oppressive and unnecessary . We got the email from the AMA and it states that the AMA rules apply and we can fly over 400 feet altitude, however we must be responsible. We all know that no matter what , when flying an RC aircraft , we get out of the way by getting very low or even crashing if necessary to avoid a collision at all costs even if the full scale aircraft is in the wrong. I know flying Pattern , IMAC or turbine s , we can easily get above this altitude.

Builders Corner: This new discussion at the meeting is trying to encourage building , tips and input from members. Mark Rotar is building a Sig Sky Bolt and a Sig Cobra. John Stoney is working on various models. Greg Prindle showed off his Ninja glider with interchangeable wings that he will use for work.

D.O.M. Nominees : John Stoney's F.F. electric which is radio controlled , caught fire . It was the speed controller and it caused a lot of smoke. Jerry Davis crashed his Nimbus glider when the elevator came unplugged . Not to be outdone Brock Brown crashed his big yellow Yak profile trying a new maneuver, a knife edge , by using the wrong rudder deflection at a very low altitude.

Safety Officer's Input : Being that I just inputted the D.O.M. award , it reminded me that I hadn't included the safety officer's sage advice . Brock reminded us to practice new maneuvers at high altitude and to check your batteries especially after a prolonged non use period and to always balance charge them.



Next Meeting : This coming Thursday , August 4th @ 7pm.

Those Pesky Lipos... Part 3

Last month we discussed charging and discharging of lipos, what to avoid, etc. Did you make it thru the chapter without taking a nap? ;-). This month let's talk about what to do with old or damaged lipos you want to dispose of. There are many approaches to getting rid of those 'aged' lipos and I certainly won't discuss all of them. What I will do is tell you what I do based on many years of using lipos and what is most 'convenient' safe and repeatable for me.

End of Lipo Life

First, let's review what can cause us to decide to get rid of a lipo. We could have used it for many successful flights, charged it carefully and never discharged it beyond 80% of the lipo capacity. But as time has gone by, the lipo has begun to lose capacity or is getting hot during use and/or has puffed to the point we don't feel comfortable using it. Or, it may have been damaged somehow like the time you ran into severe thumb turbulence or the runway tipped up 90 degrees and you ran into the side of it (come on now, we have all done it). Anyway, we need to dispose of the lipo somehow.

You could take it to some recycle service and they will dispose of it for you, typically it is a free service although they may question taking lipos for disposal. This usually involves some type of at home storage until you can get it to the recycler, maybe you have more than one and have been keeping them until it is more urgent to 'take care of it'. Or, you could take care of it yourself. Basically, we need to discharge the lipo to a near zero voltage level. This leaves the lipo in a non-toxic, safe state. There are several approaches to doing this. For example, like using your charger to discharge it. Depending on your charger, you may have to use a different setting such as a nicad/nimh settings to discharge or maybe your charger will let you gradually discharge your lipo to zero voltage and hold it there. Some chargers will let you discharge your lipo and charge another lipo at the same time. It uses the lipo we want to get rid of as a 'source' instead of a 'load'. Or, we can use some other non automated 'load' to gradually discharge the lipo. This is usually the easiest way of doing it, no programming or tricking your charger, etc. All we need to have is the 'load' and a safe place to gradually discharge the lipo.

One of the easiest 'loads' we can use is a tail light bulb (or two in series for higher voltage/larger packs). Solder some insulated wires on the taillight bulb (#1157 tail light bulb from any auto parts store) and then put a matching male plug on the other end of the wires to match your battery. Plug the load into your lipo, place it in a safe container (large can, bucket, concrete block, etc) in a safe area like your back yard preferably on a stone or concrete surface well away from anything flammable. This is just a safety precaution, I have never had a lipo catch on fire using this method. The light bulb will glow brightly at first then will dim as the voltage drops on the lipo pack. Just leave it for a day or so. Even though the bulb may not be shining, or even glowing, that doesn't mean the lipo is dead yet. It takes a bit of time to get to near zero voltage. After 24 hours or so, the lipo should be discharged, it will probably puff pretty badly but that is ok. Use a battery checker or multimeter to check the pack voltage. If it is zero or very near zero, the next step will ensure the voltage will remain at zero. Clip the plug off the end of the leads, strip back a couple inches of the leads and twist the leads together. If you don't do this, the lipo may recover some very small amount of voltage and we don't want that happening. Shorting the leads together ensure nothing will happen.

At this point, the lipo is inert and can be thrown in the trash. This approach works for any pack, 1 cell thru 10 cell or higher. The capacity doesn't matter, higher capacity batteries will just light up the bulb longer. The bulb is a constant load, it doesn't change resistance during the discharge. As I mentioned before, I use two bulbs in series for packs greater than 5S. Tail light bulbs can handle up to about 18 volts or so and a 10S pack could be over that. Using two bulbs in series basically increases (doubles) the resistance to the point they will handle a 10S pack. Make sure you are assembling the bulbs in series if you want to use two bulbs, wiring them in parallel will cut the resistance in half and might be too high a discharge current for the pack. Below is a picture of the simple setup I use. It can handle up to a 5S pack and has multiple type plugs on it to handle various connectors. One word of caution, if you use this type setup remember to put a some type safety cover over the exposed ends of the male plugs. Note, this bulb setup is wired in parallel which increases the current draw. I use it primarily for large capacity 5S packs that I want to get to zero volts overnight. I have a couple other bulb configurations I use for various size packs.

You can use any type load you want, a simple wire wound resistor with a high enough resistance value would work. A 60 watt light household light bulb would probably work, but they are not as handy as the simple tail light bulbs. Off the top of my head I can't remember what the resistance should be, but you would need a resistor physically large enough to handle the heat dissipation. Some resistors are actually built into heatsinks to help dissipate the heat. You can use your imagination here, just be careful you have enough resistance in the circuit to limit the initial discharge current to prevent the lipo from overheating.

Remember I mentioned using a salt water bath in the last months article, here is why you don't want to use it.

Salt Water Bath.... NO!!!

There has been a discharge approach for lipos floating around the internet for quite some time. Somehow, it just won't die and go away so I will cover it here and maybe help someone reading this that thinks this will reliably discharge a lipo. Notice I said 'reliably'. The salt water bath approach 'might' work but there is no easy way to check whether it worked or not and you might be throwing away a lipo you think is fully discharged but isn't.

The theory..... Pure water will not conduct energy, in fact has almost infinite resistance. BUT, add some chemical like salt and it will conduct current very well. So, if we take water and add salt to it, drop a lipo pack in the salty water it should gradually/safely discharge the lipo to zero voltage over time by allowing current to flow between the positive and negative leads of the pack. Sounds good, right? Theoretically it should work... BUT it ignores the fact that the salty water will also cause a oxidation/corrosion process to occur as the energy flows across the connectors of the pack, including the aluminum connectors inside the pack. Over time, this oxidation/corrosion process eats away at the aluminum of the internal connectors of the lipo gradually dissolving it. Now, as soon as this process erodes the connector(s) to the point there is no connection between one or more of the cells of the lipo it will open the circuit and you will get a zero volt reading when you check the pack using the main leads. You can't see the internal connectors so you have no idea the reason you are getting a zero voltage reading externally is there is an 'open' in the internal circuit of the lipo pack. Of course, this might not occur and the salt water bath would be successful but you have no way of determining if it was actually successful without opening the pack up to verify each cell is zero voltage. So, that is the reason you shouldn't rely on the salt water bath to discharge lipo packs.

Enough already....

This is the third and final chapter in our lipo info series. I hope it has been useful to you or at least given you some piece of information that is useful in your use of lipo batteries. Lipos that we use in RC have improved a lot since the early days of use. Probably the biggest safety factor is the idea of 'balancing' the cells during charge. It took a couple years to figure out why we were getting fires occasionally. Now the chargers default to a 'balance charge' and we have discussed why you should always use balancing charging for best safety practices. Lipos will continue to improve in capacity, weight, cost and reliability over time. We are now seeing higher voltage cells but it will take a bit of time to see how they will stand up to repeated use. And they will probably improve also.

I am not a lipo 'expert' by any measure, I have no idea how they chemically store or create energy for example. However, I do have a lot of experience using them over the past 6-7 years. I read a lot and am always curious 'why' something happens. Due to the way I use lipos while flying pattern, the packs I use get the same workout time after time so I can observe how packs age, how one pack compares to another, etc. This affords me the luxury of having a stable base to compare performance rather than constantly using different capacity lipo packs, different flight conditions/planes. Not exactly scientific but can be a good base of information about how and why lipos do what they do.

If anything I have covered here is confusing, let me know and I will try to explain it better. And, if something I have said is wrong, please just let me know. That way we can get the articles corrected since they are posted on the SAM website for future reference so we want accurate information.

So, be safe, have fun!!! Happy Landings

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