



MARCS Mish Mash



Next Meeting, February 2nd, 2012 Whole Hog Café -6:30 p.m.

Wait and See Mode- From the Editor's Desk

Below is a copy for the AMA website regarding pending rulemaking...this could be hobby changing. Please stay in "the know" and be ready to write, respond and generally advocate for our hobby...The Editor

We now know that the release of the Notice of Proposed Rulemaking for the small Unmanned Aircraft Systems rule has officially slipped to 'spring 2012'. However, there's still a chance we may see the NPRM sooner rather than later and it wouldn't be too surprising to see the proposed rule as early as February or March.

Here's what we know so far:

- FAA has determine the need to regulate model aircraft (MA) activity and are including operating criteria for MA in the upcoming small Unmanned Aircraft Systems (sUAS) rule.
- Though the exact content of the rule is not yet known due to the ex parte requirement of the rulemaking process, we have been told the MA criteria will be very restrictive.
- The proposed rule will specify when, where and how model aircraft fly and will most likely include significant restrictions on altitude, speed, and operations near airports.
- The rule will also have a provision allowing AMA to develop its own set of 'standards' that if accepted and adopted by the FAA can be used as an alternative means of complying with the sUAS regulation, if and when it's implemented.
- AMA currently has a workgroup in place that is working with FAA's Unmanned Aircraft Program Office (UAPO) in developing a set of standards that, with greater attention to safety, will hopefully allow modelers to continue to operate and enjoy the hobby in much the same way as they do today. Unfortunately, we are still a long ways away from finalizing the content and being able to speak to the specifics of the MA standards.
- AMA is timing its standards development process so as to have a set of MA standards accepted and adopted by the FAA by the time the sUAS rule becomes regulation in mid to late 2013.

We know that the release of the sUAS Notice of Proposed Rulemaking is imminent, but until the proposed rule is published and the actual content is known we're unable to isolate and speak to the specific issues. We're in an unfortunate wait and see mode. Nevertheless, this is still a very dynamic situation and we need to remain vigilant and attentive to the issues as things evolve. Once the NPRM is released, it's extremely important that each and every modeler and anyone with an interest in model aviation participate in the public comment process. The most current information on the NPRM and the proposed rule can be found on this webpage, on Facebook at <http://www.facebook.com/AMAGov> and on Twitter at <http://www.twitter.com/AMAGov>.

February, 2012

Issue #184

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General information on care and feeding of LiPo batteries...by Tony Strotman

1. Fully charged voltage is 4.20 per cell.
 2. Lowest discharge is 3.3 Volts per cell under load. Hard to measure so look for about 3.7 volts per cell after landing.
 3. You should avoid pulling more than 80% of the batteries rated current. Ex: 1200mah 20C battery: 24 amps rated pack discharge $\times .8 = 19.2$ amps. Watt meters are useful for determining amp draw in a given setup.
 4. You should avoid using more than 80% of the available milliamps. Ex 1200mah battery: $1200 \times .8 = 960$ ma.
 5. You should not leave a battery fully charged or completely discharged for extended periods of time. (Definition of extended is not universally agreed on. I like 24 hours.) The battery should be set at the "storage" value. Generally agreed to be 3.85 volts per cell (+/- .1 or so). More important not to leave them charged, it can increase the internal resistance of the pack and lower the C rating. A 25C rated pack may begin to become a 20C or lower rated pack, which can lead to over discharge rates, and puffing of cells.
 6. The battery should be balanced, all cells equal, at full charge. Not a concern if unbalanced at other charge states. So use a balance charger in general when charging them.
 7. You can charge batteries in parallel as long as: same cell count, similar state of discharge, and similar age.
 8. Batteries connected in parallel produce the same voltage as a single battery but the current available is doubled.
 9. Batteries connected in series produce double (for two batteries) voltage but the current remains the same as for a single battery.
 10. A battery discharged at 1C will produce its rated current for 1 hour. A battery discharged at 2C will produce twice the current but only for 30 minutes. A battery discharged at 10C will produce ten times the current but only for 6 minutes. (Take the rated mah and divide by 1000 to find 1C)
 11. The amount of current in the system is dependent on the battery voltage and the motor/prop combination. If the motor/prop demands more than your battery is rated for the battery will try to provide it. If the demand is too high the battery will supply the demand until it fails.
 12. The ESC must be rated high enough to safely pass the current demanded by the motor/prop. You can go bigger without a problem but not smaller.
 13. The ESC is (usually) three devices in a single package. ESC, BEC, and LVC. The ESC controls motor speed based on the throttle signal from the Rx. The BEC (Battery Eliminator Circuit) reduces the battery voltage to 5-6 volts to power the RX and servos. The LVC (Low Voltage Cutoff) cuts power to motor if the battery voltage gets too low. Power to the Rx and servos is not affected, thereby leaving you with a glider or much reduced power system, but still in control. Note that most LVC circuits kick in at 3.2v/cell, which is below the 80% rule. So you generally should not try to fly until you hit low voltage cutoff.
- NOTE – An ESC may or may not contain a BEC. Also, a separate BEC may be used instead of one contained in an ESC to: 1) provide higher maximum current for driving servos ; 2) ensure receiver and servo function even if ESC fails. If a secondary (standalone) BEC is used, and your ESC contains a built in BEC as well, you should pull the red wire out of the servo plug before plugging into the Rx. That will effectively disable you from using the onboard ESC BEC in addition to the standalone one. You don't want two power sources feeding an Rx on the standard servo pins. Some Rx's allow for dual inputs. Most do not. Disable the ESC's BEC if you are unsure and using a secondary BEC.

From the Prez...

It is time to renew your Club Membership...in fact by the middle of the week it may be too late to get the tremendous value at a great price that a club membership provides to those who renew on time. No, no free trial offers or surprise bonus gifts but a healthy dose of me and my staying off your tail.

Also, don't send your dues to the editor because he may run off and go to Mexico or something like that...! Get them into my hot little hands!!!

BTW, go see Red Tail's, the movie; you will be glad you did.

That's all this month...let's fly.

President Randy Womack



2012 Membership Dues & Pilot Information

Initiation Fee	\$40.00
Regular Dues	\$80.00
Senior Dues	\$65.00
Junior Dues	\$10.00

Dues are Due!

MARCS EVENTS- 2012 CALANDAR

- Feb OPEN
- Mar 17 Work Day
- Apr 7 Pancake Breakfast
- May 19 and 20 Petit Jean Mountain Fun Fly
- Jun OPEN
- Jul OPEN
- Aug 25 Float Fly
- Sep 3 Labor Day Cookout
- Oct 13 Pancake Breakfast
- Nov 17 Hot Dog Fun Fly
- Dec 8 Christmas Party

Welcome New Club Members

Shawn Gilbert
Joe Lazenby
Landon Cramer

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How to Choose and Compare Chargers...by Ryan McCon...

Most of you know that I converted all of my RC equipment to electric power a couple years ago. With that move I quickly realized I needed to upgrade my charging setup if I wanted to be able to fly as often as I wanted without waiting for batteries to recharge constantly. So my "science experiment" of a charger board began to evolve. You may have seen it... a complicated appearing board with wires and chargers all over it ☺ Lately I find that I frequently get asked questions about "which charger should I buy", so I decided to write up an article about it for the newsletter and website.

The first thing about chargers is to ignore how many amps it claims to be able to charge at, and instead compare the rated watts of a charger. Many of the chargers out there say 5 amps charge rate. But they are only 50 watts, so they would only make 5 amps on a 10 volt charge voltage. Remember Ohm's law, watts=amps*volts. So if you had some 6 cell batteries, the voltage would be 25.2 volts. (4.2 per cell, so $6*4.2=25.2$ volts). With a 50 watt charger you will only get about 2 amps out of it. So your 5 amp charger is not actually 5 amps at all now. Compare watts instead.

Logically then the next step is to figure out how many watts you need. Take your biggest packs, and figure out how fast you want to be able to charge them at, or can charge them at. With many packs these days being rated for 5c charge rates (12-15 minutes), it's helpful to have higher powered chargers that can actually do high rate charging.

If you have a plane that flies on say a 3 cell 2200 mah sized pack, perhaps the most common size out there, the math would be like this: A 1c charge rate (1 hour) is 2.2 amps at 12.6 volts. Remember 4.2/cell, so 12.6 for the pack voltage, and the amps would be taking the capacity and dividing it by 1000 for a 1c charge rate. $2200/1000=2.2$. So $2.2 \text{ amps} * 12.6 \text{ volts} = 28 \text{ watts}$ for a 1c charge rate. Let's say you wanted to charge it at 5c for faster recharge times. (Make sure your battery supports this first!) 28 watts for a 1c charge, so $5*28 = 140 \text{ watts}$ required on your charger. So you would want a 150 watt charger to do that. If you have a bigger plane, like my 9.5lb 25% size planes, they might fly on a 6s5000 pack. Or a Trex600 helicopter that uses the same packs, then you would have the following: $25.2 \text{ volts} * 5 \text{ amps} = 126 \text{ watts}$ for 1c charge. So a 5c charge on that pack would be 630 watts! There aren't too many chargers out that charge at that rate. iCharger 306 or 3010, or the Powerlab 8 will though.

One last consideration on this would be input power. All of the higher powered chargers out there need 18 volt or higher input voltages in order to make their rated wattage. So your standard car battery, computer server power supply, or radio shack 12v power supply start to become inadequate. For example an iCharger 208b is rated at 350 watts output with input voltage of 18 volts. On 12v input it will only output about 280 watts. It will run just fine, but not make as much power as it is capable of. So keep that in mind when pricing out your charging setups.

There are some options out there to get 24 volt or higher input voltages, and many of us at MARCS are using various different ones. If you have questions about it feel free to ask me. Also I will be writing a more detailed and longer version of this article to post on the club's website. So check the "Workshop" section of the website if you are interested. As always, feel free to ask me any questions you might have!



**MID ARKANSAS RADIO CONTROL SOCIETY
(M.A.R.C.S.)
January 05, 2012
MEETING MINUTES**

The meeting was called to order at 6:30 p.m. by our president Randy Womack with the Pledge of Allegiance.

New Members: Robert Betzoid and James DeBruler

New Pilot: None

Rating Change: None

Guest: None

Announcements:

Randy is trying to secure the movie house next door on January 20, 2012, for the premier showing of the movie Red Tails. He thinks ticket prices will be \$7.75 or \$6.50 for seniors.

Reports:

December 2011 meeting minutes were read and accepted.

December 2011 treasurer report was given and accepted.

Old Business:

The newly purchased heat and air unit has been installed and seems to be functioning great.

We have not heard anything back pertaining to the Walk of Fame brick we purchased.

New Business:

Randy inquired about having our 2012 Christmas party at Cajun Warf. Quoted price was \$23.95 per person. Members present expressed a concern with the cost at Cajuns and decided we should stay at the Whole Hog Café.

Doors on the porta potties have been having a problem with blowing open during a wind. We just had one door fixed for a cost of \$135.78. We have got to get some type of device that will keep them from blowing open during a wind.

March 17th will be our work day at the field. Some items that need to be addressed are, repair roof on north lean-to, repair the electric fence, put water seal on the lawnmower shed, and we may need to paint the lawnmower shed.

Randy reviewed the events scheduled for this year. They are in the Mish Mash newsletter.

Show and Tell:

Ron Stanfield showed a Senior Kadet he built. It is powered by a Magnum .46 and has not been flown. It was model number 220 for Mr. Stanfield.

Raffle:

Jim Ault won a ball wrench set.

Mark Humphries won a ball wrench set.

Gordie Loiselle won an Accur Thrower device.

Attendance:

There were 17 members present.

Raffle:



MISH MASH

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