



Facebook Group: Alvin RC Flight Line

www.alvinrc.org

AMA Leader Club – Gold Level

Newsletter of Alvin RC Model Airplane Association

First Quarter 2020 (Jan, Feb, Mar)

HAPPY NEW YEAR!

2019 In the rearview mirror

We ended 2019 having had a good year with our membership holding fairly steady and money in the bank even after some abnormal expenditures. Some major highlights include:

- Big Bird – our Big Bird was held on the Saturday of the Easter weekend and turned out to be a successful event. Attendance was slightly below normal but the weather was good, plenty of nice entries and good food and prizes.
- Field is in great shape and the drainage improvements that were made over the last few years has had a major impact removing water from the taxi and pit areas leaving the field flyable almost immediately after a substantial rain.
- Entry road has been regraded and rock added to eliminate potholes and damage at entry drive.
- Mike Vawters Memorial Charity Fly In – we had planned to hold our annual fly in memory of Mike Vawters in partners with Brazoria RC Club but due to wet field conditions we decided to cancel the fly in and simply hold a charity fundraiser utilizing the RC items donated by Mike's sister along with other items donated by members the following weekend. We had a silent auction, garage sale table and a "take what you want and donate on your conscience" table along with accepting donations. Even with a low turnout the event turned out to be a very successful event generating \$2,150 which we donated to the Brazoria County Sheriff's Dept. by way of Walmart Gift cards to be distributed to less fortunate folks by the deputies. Below is a letter from the Sheriff and a photo of the deputy and a few members when we presented the gift cards:

CHARLES S. WAGNER
SHERIFF



J. G. ADKINS
CHIEF DEPUTY

BRAZORIA COUNTY SHERIFF'S OFFICE
3002 COUNTY ROAD 42
ANGLETON, TEXAS 77513
979-664-2214

December 5, 2019

Mr. Benny Behrens, President
Alvin Radio Control Model Airplane Association

Dear Sir:

On behalf of myself and the Brazoria County Sheriff's Office I want to thank you and all members of the Alvin Radio Control Model Airplane Association for your contribution to the citizens of Brazoria County.

Again this year wet weather prevented the "Fly In Fundraiser" but instead members of the club conducted a silent auction which raised \$2150.00 that you wish to contribute to the Sheriff's Office in the form of cash cards. The Sheriff's Office through its deputies will identify citizens in need due to various hardships and will then distribute these cash cards to those citizens. Your contribution along with our "Blue Santa" program will make sure that many families who otherwise would have had a very bleak Christmas season will now be able to celebrate.

Again, I wish to thank you and your fellow members for such a generous act and for giving the Sheriff's Office a chance to be a part of your team to help those in need.

Sincerely,

Charles S. Wagner, Sheriff
Brazoria County, Texas



2020 in the headlights

- Quarterly meetings – we have made the decision to change to quarterly member meetings instead of monthly. This will not preclude holding/calling special meetings if unusual items/issues come up between regular meetings. Meetings will be held in the clubhouse at 9AM on the 4th Saturday of January, April, July and October. This will stay consistent with the requirements of our Bylaws which calls for nomination of Officers and Board Members in October. If for any reason voting by mail-in ballots is required we will call a special meeting in November to present results. Gene has graciously volunteered to cook our “old fashion” full breakfast before our quarterly meetings from 7:30AM and 8:45AM. Cost of the breakfast will be at the “outrageous” price of \$5. Remember breakfast will only be at our quarterly meetings not special called meetings.
- Our annual Big Bird for 2020 has been sanctioned for April 11th in the same format as in years past.
- 2020 will probably be an active year for FAA issuing proposed rule changes and new rules that may affect our activities. There is already an active comment period related to the new proposed Remote ID requirements and activities related to flight altitude and distance limitations from fixed Chartered Flying Fields. During the new year these activities and others will probably be active and we encourage everyone to stay informed and proactive in what FAA may be proposing or requesting comments. Sources for information and to stay current include FAA's website, AMA's email newsletters/bulletins, AMA's blogs on their website and postings on AMA Facebook Group and our Facebook Group. It is extremely important that as many members as possible stay proactive and

responsive if there is any hope to influence how FAA may try to influence our hobby.

Safety

If you have a question or suggestion about safety rules contact Tom Youens directly or via email, htyouens@hotmail.com. I feel most of our members are very safety conscious, but if you should see someone repeatedly violating rules please contact me and I will discuss it with the member; your name will be kept confidential.

New Members:

Introduce yourself and welcome our new members – if you happen to introduce yourself and welcome an old member now you know them and if you do it twice you will know them better and be getting near my age!!!!!!!!!!

For Sale or Wanted:

Nothing submitted – guess everyone wants to keep their stuff!

Lost and Found:

If you have lost or found an item at the field that you do not know who it belongs to please let us know so we can post the description. Most items found at the field are placed on the counter by the row of windows in the clubhouse.

The Technical Corner – by Ken White

A METHOD TO MEASURE ALTITUDE FOR RC PLANES WITHOUT TELEMETRY By Ken White

In my earlier days of flying sailplanes I learned of a simple method to get a quick estimation of altitude of the model after finding a good thermal. First you had to know a few things such as the wingspan of the model and the altitude I was looking for. The method is quite simple and fairly accurate and involves fairly simple math. In those days we flew with an antenna on our transmitters. On top of the antenna was a circular knob. Pointing the knob toward the sailplane (briefly) and comparing the width (diameter) of the knob to the wingspan of the plane provided the method. When the two matched you knew the approximate altitude for that model. Based on this I decided to use this to create a quick method to determine the 400' and 700' altitudes without using electronic telemetry; however, to “verify” the method I used a SkyRC GPS unit in the plane.

Here is how it works. First determine your known values which are the wingspan of the model (S), the altitude you want (H), the distance from your eye to the sighting device (d) and the angle (theta) from the ground to the plane which we will fix at 45 degrees.

Note since we do not use long antennas anymore, some sort of sighting device will be used.

Now for the unknowns which are the distance from your eye to the plane (D) and the diameter of the sighting device (x).

Oh boy, here come those dreaded formulas:

There is a relation for the distance from your eye to the sighting device and from your eye to the plane and a trig relation for the angle, height and distance to the plane.

They are:

$$x/d = S/D \quad \text{and} \quad \sin(\theta) = H/D$$

That's it, all we have to do now is solve for the two unknowns. First solve for D, since we know H and theta, then using that D, solve for x.

Here are the values I used for the test using my Slow Ride airplane,

Wingspan $S=63.5''$

Distance from eye to device, $d = 25''$

Altitude, $H = 400'$ and $700'$

Angle, $\theta = 45$ degrees

Solving for Distance from eye to plane using $400'$ value

$$D = H/\sin(\theta) \quad \text{or} \quad 400'/\sin(45) = 565.68'$$

Solving for diameter of sighting device:

$$x = (S*d)/(D*12) \quad (\text{the value } (12 \text{ in/ft}) \text{ is to convert feet for } D \text{ to inches})$$

$$x = (63.5 * 25) / (565.68 * 12) = 0.23'' \quad \text{or approximately } 1/4''$$

The same can be done for $700'$, but since we did not test it, I will leave the calculations out, but for info, $x =$ approximately $1/8''$

THE TEST

I went out to test the method. I have a GPS device that I mounted in the plane just to verify the results. The first day I did not have a sighting device to measure the angle accurately so I found a screwdriver handle that was a $1/4''$ in diameter. I discussed what I was doing with Johnny Pearce and he became quite interested and helped me with the test. I flew the plane up and Johnny held the screwdriver up to what he estimated to be 45 degrees and when the wingspan and the object matched he told me and I brought the plane down. We did several tests and I threw several out because I flew too high. On most of the test I was slightly over or slightly under the $400'$ goal, but was not off too badly with the difference between the GPS unit being within 50 feet of the goal. It was decided we needed a better method to accurately measure the angle. The next day, Johnny made a crude but workable device consisting of the piece of cardboard cut to 45 degrees, sighting devices cut to various diameters and a level. We made a couple of more tests and with the help of Grady Owens making sure the device was level we repeated the test. It was a windy day and I was able to park the airplane in one spot and slowly climb. When Johnny called it, I brought the plane down to verify the altitude. We had one really good test where I could control the plane smoothly and we knew the device was at 45 degrees and the wingspan matched the sight. When we looked at the GPS device and corrected for field elevation and the height of the sighting device it read $397'$. That's close enough to prove the method works. A few days later I wanted to test the method again with different people. Fred Daniels and

Ben Donnell helped out and we repeated the test. Again we were within 50 feet. Both parties struggled with holding the test device at the 45 degree angle, but it was close. After some discussion we feel that if the sighting device could be attached to a stable base such as a tripod, then the observer only has to worry about one degree of movement and does not have to worry about keeping it level. Then the pilot can be directed to either fly a bit farther out or higher. However, the whole point of the exercise is to be able to estimate the altitude of the plane quickly using anything that is the correct diameter or width as a sighting device and estimating the 45 degree angle. Make it simple. Find a tool, a stick or whatever is the correct size, hold it up to approximately 45 degrees and when the wings and device match you should be within 50 feet or so of your desired attitude.

Based on this method, I created a table with various wingspans and the appropriate size sighting diameter should you want to determine if you are higher than the 400' or 700' levels. It is a bit crude because the range between spans is fairly large, keeping the measurements for the sighting device within 1/32" of each other. If you want more accuracy, make the calculations and determine a more precise measurement for the sighting device.

DIMENSION OF SIGHT DEVICE PER WINGSPAN RANGE			
For 400 ft.		For 700 ft.	
Wingspan (in)	Sight dia. (in)	Wingspan (in)	Sight dia. (in)
48 - 54	3/16		
55 - 63	7/32	54 - 67	1/8
64 - 72	1/4	68 - 81	5/32
73 - 81	9/32	82 - 96	3/16
82 - 90	5/16	97 - 111	7/32
91 - 99	11/32	112 - 128	1/4
100 - 108	3/8	129 - 144	9/32
109 - 117	13/32		
118 - 124	7/16		
125 - 134	15/32		
135 - 144	1/2		

NOTE: ALL VALUES BASED ON 25" FROM EYE TO SIGHTING DEVICE. IF YOU ARE USING SOMETHING SIGNIFICANTLY DIFFERENT WILL REQUIRE YOUR OWN CALCULATION

STORAGE CHARGE YOUR LIPO BATTERIES

By Ken White

You should not store LiPo batteries dead nor should you store them in a fully charged state. For the longest life of your battery, LiPo's should be stored at room temperature at 3.8V per cell. A liPo battery could be damaged by just setting in a fully charged condition. It might only take a few hours but usually extended time such as a week before damage occurs. Most likely the internal resistance of the battery will increase and after use the battery will get hot or hotter. Heat reduces the life of a battery. They may also puff up. So, if you like buying batteries ignore this article otherwise use the storage feature on your charger.


Attached are a couple of charts the electric guys may find useful. One indicates the approximate battery percentage, voltage and the recommended storage range. Note there is a range, however the optimum is at 3.8V per cell at 34%. The second chart is similar but provides the voltage for 1S through 6S so you don't have to do the math.

Note that the two charts do not match exactly, but are close estimates. The charts were found on the Internet and I do not have the sites to give credit.

State Of Charge vs. Lipoly Pack Voltage

% Capacity	1S Cell	2S Pack	3S Pack	4S Pack	5S Pack	6S Pack
100	4.20	8.40	12.60	16.80	21.00	25.20
95	4.15	8.30	12.45	16.60	20.75	24.90
90	4.11	8.22	12.33	16.45	20.56	24.67
85	4.08	8.16	12.25	16.33	20.41	24.49
80	4.02	8.05	12.07	16.09	20.11	24.14
75	3.98	7.97	11.95	15.93	19.92	23.90
70	3.95	7.91	11.86	15.81	19.77	23.72
65	3.91	7.83	11.74	15.66	19.57	23.48
60	3.87	7.75	11.62	15.50	19.37	23.25
55	3.85	7.71	11.56	15.42	19.27	23.13
50	3.84	7.67	11.51	15.34	19.18	23.01
45	3.82	7.63	11.45	15.26	19.08	22.89
40	3.80	7.59	11.39	15.18	18.98	22.77
35	3.79	7.57	11.36	15.14	18.93	22.72
30	3.77	7.53	11.30	15.06	18.83	22.60
25	3.75	7.49	11.24	14.99	18.73	22.48
20	3.73	7.45	11.18	14.91	18.63	22.36
15	3.71	7.41	11.12	14.83	18.54	22.24
10	3.69	7.37	11.06	14.75	18.44	22.12
5	3.61	7.22	10.83	14.43	18.04	21.65
0	3.27	6.55	9.82	13.09	16.37	19.64

Stay in the white region for maximum pack longevity

Approximate Battery Percentage, Voltage and Recommended Storage		
% of Charge		Volts Per Cell
3%		3.50
5%		3.55
7%		3.60
9%	Critical Low	3.65
15%	Minimum Low	3.70
22%		3.75
34%	Optimum	3.80
50%*	Storage	3.85
60%	Range	3.90
69%		3.95
77%		4.00
83%		4.05
89%		4.10
96%		4.15
100%		4.20
*Middle Storage Range		

COMMENTS

Let me know if you like "The Technical Corner". If not, that's ok too. If you have suggestions, I'm open. Next newsletter I plan to provide the formulas to calculate the CG for both conventional aircraft and canards. After that I have lots of data for the design of flying wings if anyone is interested. Warning, it does get technical. Contact me at the field, call me or email me. Contact info in on the club roster.

Smiles:



Think of a number between 0 and 20. Add 32 to it. Multiply by 2. Subtract 1. Now close your eyes. Its dark Isn't it



The longer Grandma waited to update her eyeglass prescription, the more entertaining the annual Christmas story became.



Me about to make a bad situation worse by injecting some ill-timed humor.



Upcoming Events:

- Events both flying and non-flying are listed on AMA's website under Competition/Calendar and also listed in AMA's magazine Model Aviation.

Club Executive Committee

President – Benny Behrens	Vice President & Safety Coordinator– Tom Youens
Treasurer – Grady Owens	Secretary – Tom Johnson
Board Member – Lewis Mack	Board Member – Ralph Hoeting
Board Member – Mark Manusov	Trustee – Ken White
Trustee – Fred Daniels	

Any comments, suggestions, corrections may be submitted to Benny Behrens at cbbehrens@comcast.net. If you have an article or information you would like to share with club members in the newsletter please send it to Benny Behrens.