Bend Aero Modelers

FLIGHT REPORT

SEPTEMBER 2023

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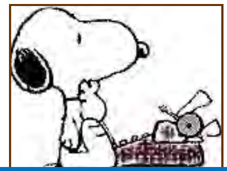
Here's the attendee's at our last meeting. Not shown is Dennis McMahon who arrived just in time for the meeting to start. The meeting started promptly at 7:30 after some pre-meeting flying. The weather was great, especially for the anticipated after meeting night flying. Several of these members participated in the night flying with some great lit up planes including Mike Chappell who flew his Mig EDF with only lights on his rudders and wing tips. Mike's motto is "don't let fear or common sense keep you from doing something".

Next Meeting

September 27, 2023
6:00 pm (Time change!) at the
Black Bear Diner

From the editor



by Andy Niedzwiecke

Well, here we are another month has passed and I have a few reminders and info as well for you. First and foremost, the meetings times have changed from 6:30 to 6:00 for the rest of the year. Second, remember that there is an outing to Schaub lake scheduled for Sept 30.

Club officer elections are coming up so if you want to nominate someone or you want to throw your hat in the ring, now's the time to do it. Right now we have for President: Bill Broich, Vice-President: Andy Niedzwiecke, Treasurer: Dennis McMahon, Secretary: Open, and Safety Officer: Terry McDaniel. If no one is nominated or choses not to put their name in for a position, then these will be your officers for 2024.

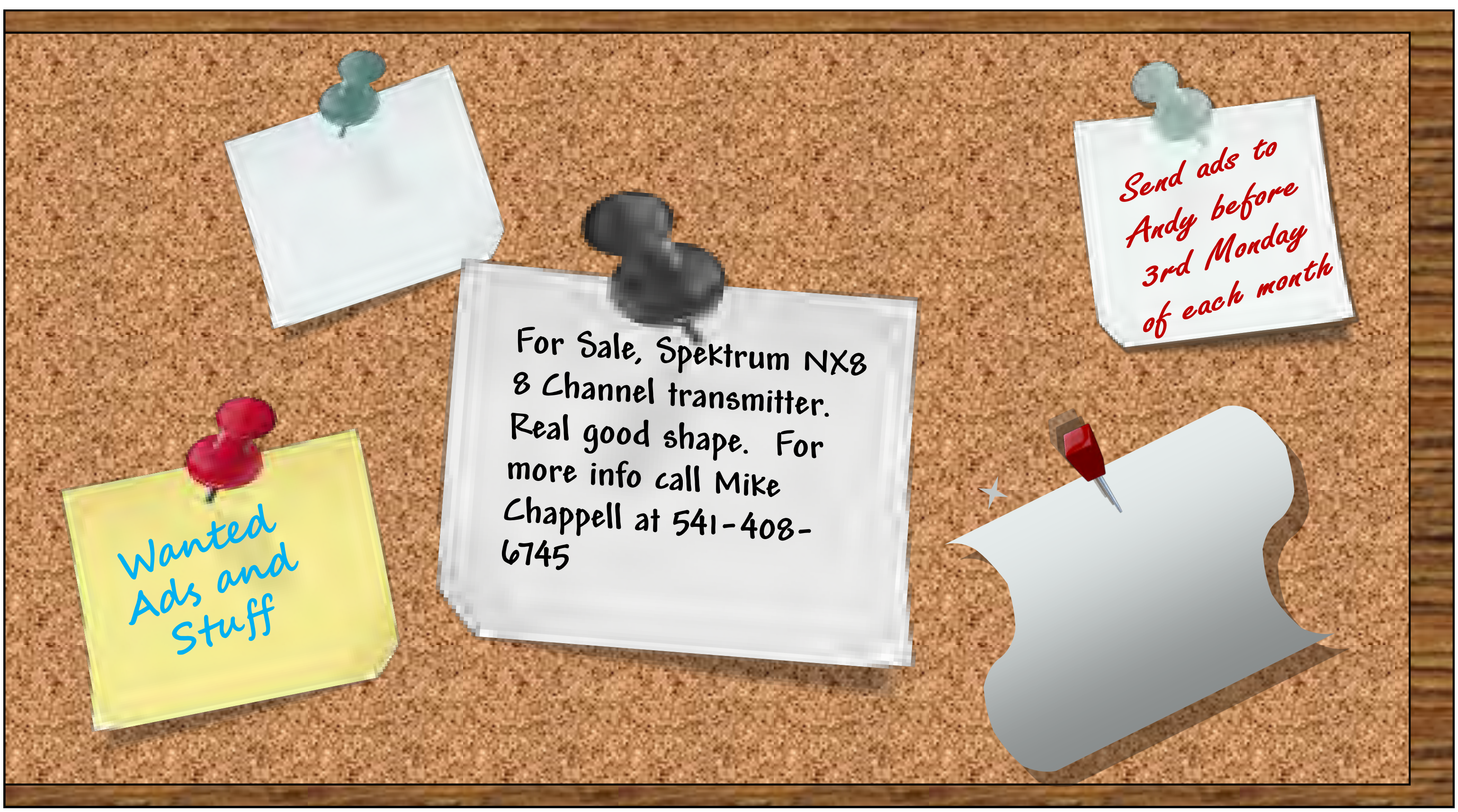
The remote ID requirements are in effect and we are happy to report that BAM field has had approval from the AMA and FAA. If you fly somewhere else you will need a remote ID module in your plane but not at our field. Enforcement has been delayed for 6 months.

A venue for the Christmas party has been determined and details will be in the next newsletter.

The item below is from our Idaho member, Tom Schramm, commonly referred to as "Trouble"

I watched the end of today's NASCAR road race at the "old brick yard"and was surprised to see the winning car, #34 a Mustang, was heavily sponsored by **Horizon Hobby**. Maybe that explains why their pricing keeps increasing.

BAM Bulletin Board



At The Field

Waldemar Frank came out to show off and maiden his new Eflite 1.2 P47. The maiden went well and he was very happy. This is an awesome warbird with all kinds of details including bombs and rocket launchers!

Randy Schoonhoven came out to the field for a little help with his Eflite 1.2 T28. After a little tinkering he did the maiden and as you can tell by the smile on his face, the maiden went very well!

Darrell Loveland, who is possibly the only fuel user at the field brought out one of his two outstanding aerobatic planes, an Extreme Flight Extra NG with a DA70 motor in it. As usual Darrell put on quite a show with his great flying skills. When he takes to the air, all activity stops at the field and people pull up chairs to watch the great aerobatics show he puts on.

Member's Articles

by Andy Niedzwiecke

I started with RC model airplanes in 1980 with my son Steve. At that time when you flew RC planes you needed to get a radio license from the FCC and of course get your AMA number (I got mine in 1980) and it is only five digits where now most of the newer members have six digit numbers.

Also at that time there were few planes that were built for you so you had to build your own trainer and hope someone would help you learn to fly so you could keep the repairs down to a minimum. My first plane was a kit by Joe Bridi who designed several popular planes of the day. Mine was called an RCM Trainer 40. My son and I both built these planes with no experience except the plans and instruction manual.

This is an RCM Trainer 40, It is my son's original plane, just restored.

After many flights, and crashes and repairs and re-builds we learned to fly. At that time there were no buddy-boxes and you had a transmitter for each plane because no computer radios existed. If you wanted to fly a different plane you either swapped out all of your equipment or bought all new equipment.

Both my son and I graduated to what was a common second plane at the time, a Midwest Sweet Stik. There were Ugly Sticks at the time but the Sweet Stik seemed to be everyone's choice. We built our Stik's together and used to have a very good time at the local field with them. These planes flew very very well and were durable, which is probably why they were so popular.

In 1990 I packed up all my stuff and we moved to Oregon from Southern California so my flying took a bit of a hit. In 1992 I found BAM and the first person I talked to was Darrell Loveland. He welcomed me and told me where the field was and I was happy to find this group of people and their flying field which, at that time, was just flat dirt. Fast forward to around 2017 when my wife and I were moving from Bend to Prineville. I was involved with RC cars at that time more than RC planes so I had sold a lot of plane equipment and planes. The last couple of planes I had were ones that I was having a hard time getting rid of for nostalgic reasons. I decided to give them to Tom Schramm and told him to give them to someone who needed a plane. I never heard who got the planes. In 2019 I decided to rejoin my plane activities so I started to attend BAM meetings again and got into foam planes rather than built up balsa planes. I used to love to build but now I'd rather just fly although

I'm building one and currently re-furbushing another. A couple of weeks ago a bunch of us were gabbing at the field and I happened to mention the Sweet Stik that I had built with my son and that I was really sorry I had given it away. Mark Benavente, who was in the bull session asked what color it was and I said "Blue and White". He responded that he had the plane and had done nothing with it but he had planned to. He then asked if I wanted it to which I responded YES. We met a couple of days later and he gave me the plane. What a kind hearted person Mark is. He actually had plans for the plane but he gave it to me because it meant something. I was really sorry I had parted with this particular plane.

This is the original Sweet Stik I built in 1984. It has been repaired several times and needs some TLC now but I hope to fly it in 2024

This is my son's modified Sweet Stik. It doesn't use rubber bands to hold the wing on and it has new covering.

Well, I hope you enjoyed my story and some of the history of RC modeling and again thanks to Mark Benavente for his kindness in returning my plane to it's home.
Cheers all, Andy

Do you know your LiPo?

Do You Know Your LiPo Batteries?

By Waldemar Frank

A few words from the author

This is a reissued article that I first wrote for our club newsletter in September 2013. After being asked to write another article about LiPo batteries for our current newsletter issue, I thought that the information in my original article is still valid. So instead of writing something from scratch, I decided to refurbish most of the original article—with some revisions—and add a section about internal resistance (IR). IR in particular has been and continues to be a passionately debated topic among hobbyists, mainly because understanding IR provides answers about your batteries' health and performance over time. There are many online and printed resources available to learn more about LiPo batteries. For example, a recent issue of AMA's ***Model Aviation*** *magazine featured another article about LiPo batteries (see March 2022 issue: "LiPo Batteries—Considerations for battery longevity," by David Buxton).*

Introduction

Electrics have established themselves as a go-to choice for many new hobbyists—mostly because of their ease of use and suitability for cost-effective entry-level foam planes. But even many seasoned hobbyists have added electrics to their collection due to the improved overall performance and extended flight times that LiPos offer compared to older battery technologies.

LiPos, or more specifically Lithium Polymer batteries, were originally designed to power electronic devices such as cell phones, calculators, watches, laptops, etc. The initial battery design for these devices involved lithium-ion batteries, which were eventually replaced by LiPos.

To make LiPos suitable for use with RC airplanes, manufacturers had to make design changes. These changes offer capacities and current discharge rates that can deliver the necessary power and flight times expected by most hobbyists.

Lithium, the lightest among the solid metals, has an extremely low melting point of only 180.5 °C (357 °F). To allow the flow of electrons (create electricity), the lithium-salt electrolyte is held in a solid polymer composite, hence the name **Lithium Polymer**. Interestingly, Lithium is also used as an anti-depressant ingredient in some medications. For our application though, its low weight is one main reason why LiPos can deliver such high energy relative to their weight compared to older battery types such as NiCd and NiMH.

However, good performance comes with a price: Lithium has also violent reactive characteristics, which require special care in its handling. When on fire, it produces corrosive and toxic fumes. Further, it aggressively reacts with water and has explosive tendencies. Thus, these tendencies should be taken into account when dealing with LiPos.

A typical configuration of a LiPo battery for RC applications includes one or more cells that are connected in series and/or in parallel. Each cell has a nominal voltage of 3.7 volts and up to 4.2 volts when fully charged. For example, a 3-cell battery (e.g., 3 cells connected in series) has a nominal voltage of 11.1 volts (3 x 3.7 V = 11.1 V) and 12.6 volts (3 x 4.2 V = 12.6 V) when fully charged.

DO YOU KNOW YOUR LIPO?

continued

The first LiPo batteries only included the battery leads—a balance connector was added as a safety feature once it became clear that LiPo batteries could ignite due to overcharging. Because each cell has its own physical characteristics, charging LiPos requires balancing of the voltage per cell to ensure that no cell is being overcharged (in excess of 4.2 volts), which could lead to sudden combustion and fire. Equally important, to ensure longevity in LiPo batteries one should not discharge individual cells below 3.3 volts.

Following is a summary of the key information used for labeling LiPo batteries. Please note that the arrangement of the information can vary by manufacturer:

1 **Manufacturer/brand name**

2 **Battery product line**, an additional distinguisher manufactures sometimes use to identify their different lines of batteries.

3 The **capacity** of the battery expressed in milli Ampere hours or simply Ampere hours. This is the current the battery could supply for one hour (less time if a load is applied). In the above example, this battery has a capacity of 3,000 mAh or 3 Ah.
The capacity can be viewed as the "size of the electric fuel tank." That is, the higher the capacity, the longer the flight time when used with the same motor and propeller configuration. A bigger propeller (diameter and/or pitch) draws a higher current and therefore depletes the energy more quickly, hence reducing the flight time. The same applies when a more powerful motor is used on the same airplane.
The theoretical flight time (in minutes) can be calculated as follows:

(Capacity of battery x 60) / Current draw of motor-propeller configuration

Example:

3 Ah (3,000 mAh) LiPo battery with motor-propeller configuration that pulls 30 A at full throttle:

(3 Ah x 60) / 30 A = 180 / 30 = 6 minutes

Please note that most flights don't involve full throttle for the entire time and the actual flight time can be longer. In addition, you typically do not want to discharge the battery below 20% of its total capacity after a flight. This ensures the longevity of your battery and retains enough capacity for a go-around if needed to land safely or to wait for other airplanes to land first.

Do you know your LiPo?

continued

I have my timer set to go off when there is roughly 25%-30% capacity left. You can experiment with your setup and perform some test flights to determine the approximate timer setting based on your preferred flying style (leisurely vs. aggressive). In general, I found this to be a good rule of thumb to balance flight time, fun, and risk of power drop. **Example:** Let's assume that you deplete 70% of the battery capacity before landing. The approximate flight time would be as follows at full throttle:

$$(3\text{ Ah} \times 0.7 \times 60) / 30\text{ A} = 180 / 30 = 4.2\text{ minutes} = 4\text{ min. } 12\text{ sec.}$$

Many motor manufacturers provide information about different propeller and cell configurations as well as the corresponding maximum current draw for that configuration. You can use this data to determine which battery size, propeller, and speed control work best for your specific airplane and application.

4 The **C-rating** indicates the maximum discharge rate of the battery. For example, 1C means that a battery can provide a maximum continuous current discharge rate of 1 x capacity. The above battery has a C-rating of 25, meaning that it can provide a continuous current of 25 x 3 A = 75 A.

Some manufacturers list a range such as 25-50 as shown in the above example. The second value indicates the maximum burst discharge rate. In the example, the battery could provide a burst discharge rate of 50 x 3 A = 150 A. However, the burst discharge rate can be supplied for just a few seconds before damaging the battery. Thus, never use the burst discharge rate as the design measure for your battery selection.

Overall though, the C-rating has proven to be somewhat unreliable across manufacturers as actual tests and measurements have shown. Therefore, I would consider the shown C-rating to be more of a marketing tactic by the manufacturer than a true performance indicator. Unless you actually conduct a performance test, I would take these claims with a grain of salt.

5 **Nominal voltage and cell count.** In the example, the cell count is 3 and the nominal voltage is 11.1 V. Please note that some manufacturers or distributors use classifications such as 3S1P to indicate the cell setup. "3S1P" simply refers to the number of cells and their circuitry. In this case, 3 cells are connected in series ("3S") with 1 parallel circuit ("1P").

Charging and Safety Tips

- Never charge a LiPo battery unsupervised or unattended for long periods of time.
- When charging, place LiPo batteries on a non-flammable surface (e.g., brick, concrete) and away from combustible materials (e.g., fuel, wood) or place them in a charging pouch or container available specifically for charging LiPos.
- Always use a charger that is specifically designed for charging LiPo batteries. Using the wrong charger can result in the destruction of the battery or charger, and cause a fire.
- For safety, charge LiPo batteries using the charger's "balance" mode to ensure that cells are not charged in excess of their maximum voltage. If using the normal charge mode, make sure to balance your batteries after the second or third regular charge to prevent overcharging of individual cells.

- Preferably charge your LiPo batteries at 1C (1 times the capacity of the battery) to ensure the longevity and safety of the battery. Although some manufacturers indicate that selected batteries can be charged at a higher rate (e.g., 2C-5C), it usually means that you will compromise the integrity and life of the battery over the long term.
- Never charge a LiPo battery when installed in the airplane. Always remove the battery from the airplane before charging.
- Always inspect LiPo batteries for damage or excessive puffiness, especially after a crash.
- Don't use LiPo batteries if they show clear signs of wear and damage.
- Routinely measure the IR of your batteries to assess if selected cells are degrading faster than other cells or if the total IR of the battery is starting to noticeably affect the performance of the battery. As a tip, label your batteries to indicate the purchase date and initial IR values per cell for reference.
- Always discard LiPo batteries following the manufacturer's recommendations.

Understanding Internal Resistance (IR)

Introduction

Internal Resistance, or IR for short, is an important measure that helps assess the **(1) health** and **(2) performance** of a LiPo battery over its lifecycle. By routinely checking IR values, you can safely determine when it's time to retire a LiPo battery.

In general, the change in IR values is a symptom of the aging process of a LiPo battery. The aging of a LiPo battery can be grouped into **(1) usage aging** and **(2) natural aging**. While usage aging accelerates the aging effect, natural aging is much slower and the result of a chemical process. In most cases, you will not notice the effects of natural aging. The reason is that most hobbyists retire their batteries long before that point due to usage (e.g., damage, performance issues of individual cells, charge/discharge cycle limit reached). Because every charge and discharge cycle imposes stress on your battery, its performance gradually declines over time. This decline correlates with an increase in the IR value of the battery. More importantly, measuring the individual IR values for each cell gives you an even better understanding of your battery's health.

Measuring IR

Before you measure your battery's IR, ensure consistent conditions. Consistent conditions allows you to minimize the potential for deviations in readings. These deviations can lead to incorrect interpretation of your battery's condition. This way, you can directly compare values of a new reading with the values from a previous (older) reading. The goal is to establish an IR value history over time for a given battery so you can anticipate when to retire the battery.

To actually measure IR, you can use a range of devices. In many cases, you can use your LiPo charger if it provides the option to display IR values per cell. Alternatively, you could get a dedicated device such as the 5-in-1 Tenergy battery meter. You can get it online at Amazon or other retailers. Just make sure that your device actually has the ability to measure IR. Some battery meters do not offer this feature.

DO YOU KNOW YOUR LIPO?

continued

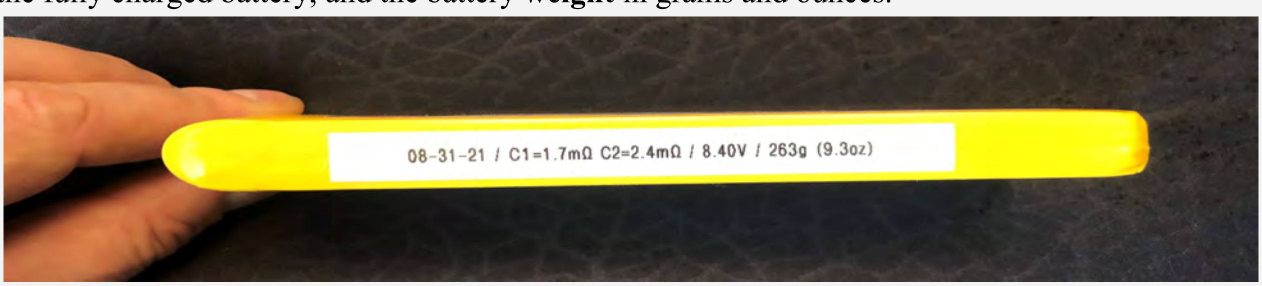
Following are some general suggestions to consider before taking any measurements:

- Use the same equipment/device to measure IR values for each health check. Unless you have access to sophisticated and calibrated equipment, different measuring devices (by brand or product) will likely produce slightly different values. By using the same device for all your measurements, you will improve the comparability and interpretation of results.
- Make sure that the temperatures are the same for all your measurements. That is, take measurements at room temperature (e.g., 72 °F). Also, let your battery fully cool down to room temperature before taking a measurement.
- Measure the IR values after the battery is fully charged. The IR values of a partially discharged battery are higher when you start charging and then decline slightly as the battery approaches a full charge.
- If you charge your batteries at a higher rate (>1C), wait a while for the battery to cool down to room temperature after completing the charge. Because batteries warm up when charging at higher rates (>1C), the IR readings will be different for the same battery at room temperature.

Interpreting IR Values

Interpreting IR values should focus on two things: (1) **Increase** in IR value **per** cell and (2) **differences** in IR value **across** cells over time. The first focus area is relevant for understanding the impact on performance. The second focus area indicates potential health (safety) concerns

TIP: Label your battery when you take your very first measurement, for example after you buy and fully charge the battery. This way you establish initial reference values that will help you gauge the IR changes over time. Below is an example of the labels that I place on all my LiPo batteries. In the example, you see a 2-cell LiPo. The information includes the **date** of the very first full charge, the **original IR values per cell** in milli Ohm (mΩ), the total **voltage** of the fully charged battery, and the battery **weight** in grams and ounces.



In general, as IR values increase over time, the battery experiences increasing energy loss due to increasing internal resistance. This is reflected in an increasing voltage drop, which in turn means decreasing maximum motor RPM. In addition, you might notice that your battery feels increasingly warmer after usage (assuming the same motor and propeller configuration).

The temperature increase is directly linked to the described energy loss because the battery is becoming less efficient in delivering the needed energy to the motor.

Do you know your LiPo?

continued

Eventually, you will reach a point where the battery is no longer capable of enabling the flight performance you expect for your model. That's the point when it's time to retire your aged, but otherwise safe battery.

In contrast, premature retirement can have several reasons. One obvious reason is visible damage to a battery. Bending, cracking, or compression are clear signs that you should no longer use the battery—even if the IR values read out OK initially. You do not want to risk losing your model because there is no guarantee that the battery won't experience fatal failure during another flight.

A puffy battery, on the other hand, does not necessarily mean that the battery has gone bad. LiPo batteries do release gases during charge/discharge cycles that can be trapped in the shrink wrap, which causes puffing. As long as the IR values indicate a healthy battery and the puffing is not excessive, you can continue using the battery. However, you should monitor the puffing as a precaution in case it becomes severe enough to cause physical damage to the battery.

While physical damage to the battery is easier to observe, identifying degrading individual cells requires measurement of the cells' IR. Typically, IR values for each cell are similar when you first purchase the battery. In this context, "similar" means within a similar magnitude. If you refer to the earlier example, my 2-cell battery shows a value of **1.7 mΩ for cell 1** and **2.4 mΩ for cell 2**.

Although these values are not exactly the same, they are within a similar range (1 to 5 mΩ). Usually, you can recognize a bad cell when its IR value degrades much faster than that of the other cells. The example illustrates why measuring individual cell values offers better insights into a battery's health. Moreover, it allows you to anticipate the potential retirement of a degrading battery.

Typical Initial IR Values

Example: Let's assume that after some time, I have gone through many charge/discharge cycles with one of my 3-cell batteries. To check its health, I take a sample reading and get the following values:

- Cell 1: 14.5 mΩ
- Cell 2: 29.3 mΩ
- Cell 3: 15.1 mΩ

I immediately notice that cell 2 shows a much higher IR value than cells 1 and 3. While the higher value of cell 2 does not necessary mean that the battery is no longer usable, it does tell me that cell 2 appears to degrade faster. I also notice during charging that cell 1 and 3 reach their target voltage (4.2 V) quicker. Also, the overall charge time of the battery is longer. In the past, it took about 40 minutes to fully charge the battery from 30% to 100% capacity—now it takes 60 minutes. I conclude that I should monitor this battery more closely and sample IR values in shorter intervals (e.g., after every third charge/discharge cycle). In addition, I decide to pay closer attention to the temperature of the battery after each flight. A warmer than usual battery could indicate that a cell is reaching its end of life.

One big question that many hobbyists have is: What are typical initial IR values for a new LiPo battery? In general, the lower the IR values, the more efficient a battery is.

There are many RC forums that have tackled this question and people have and continue to offer varying opinions. This topic is further complicated by the fact that there are no performance standards and guarantees that

DO YOU KNOW YOUR LIPO? continued

manufacturers of LiPo batteries have to meet. This means that hobbyists learn from trial and error which brands they like or don't like. In addition, the C-rating is often used as a marketing pitch by manufacturers and the actual capabilities of a battery can deviate significantly from the claimed C-rating on the packaging. Actual measurements have revealed that batteries with lower C-ratings can outperform batteries with higher C-ratings depending on brand. The sad thing is that even perceived reputable brands are not always delivering on their promise. At the end of the day, checking actual performance is the only way to distinguish true and false.

Fortunately, the RC community has developed empirical models to gauge expected IR values. One such model uses the following simple calculation:

Expected IR value per cell (at room temperate) = 12,000 / capacity of battery

Example: Battery capacity is 1,300 mAh

IR value per cell = 12,000 / 1,300 = 9.23 mΩ

Based on my personal experience, using a value of 12,000 seems a bit optimistic for many battery types that I use. The value assumes high-performance batteries. However, many hobbyists will likely choose cost-effective batteries for average flying, which generally do not deliver the high performance that this number assumes. Nevertheless, I do have a pair of 3-cell 1,300 mAh Turnigy Graphene batteries with an even lower IR value than the high-performance scenario that above calculation assumes. Therefore, I usually work with a range for my initial calculation before taking any measurements. For instance, you could use a range from 12,000 to 14,000 to get a ballpark value to work with. Then you can measure the cell values for comparison. Another approach is to collect the initial values of your preferred batteries and use that for reference instead.

If you are interested in the discussion of the above model, please refer to the following discussion thread on RC Groups (www.rcgroups.com):

- Description of the model: A simple LiPo performance tool - RC Groups
- Discussion board: LiPo "C" Ratings - A Replacement Overdue? - RC Groups

The above discussion board provides additional information, including links to a battery database that hobbyists have contributed using their own measurements. However, I must say that the database does not offer details about the age and condition of the batteries to put the uploaded values in context. So, I would take the data with a grain of salt. Nevertheless, it is a good source of information and offers additional data for your reference.

This is all from me for now. Stay safe and keep flying safely!

August 2023 Meeting

Show & Tell

Nothing!

There was absolutely nothing to show or share at the July meeting! The meetings are not only for business but for us to share and inform each other of fun or interesting stuff, or just show off our stuff. Let's not let the meetings get boring.

Obituaries

Rest In Pieces

In all fairness, Andy Niedzwiecke crashed his Vulcan but the damage was so minor a picture was not worth it. It is ready to fly again.

To the left is Bill Broich's P38, crashed but cause not known. The model is a total loss. Below is a picture that Bill's son doctored up for the occasion.

This is the collection of parts that Bill Broich has accumulated over the past month. The Avanti has been repaired and flown since this picture was taken

Below is pictured the debris field of Bill Broich's Avanti crash. The debris field was about 8'by 30' Cause of the crash is unknown as Bill is an excellent pilot and this situation just came out of the blue, no pun intended.

Bend Aero Modelers - 2023 Club Calendar

Club Meeting | Club Event | BAM Membership Renewal Deadline

January

Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	1	2	3	4	5	6	7
2	8	9	10	11	12	13	14
3	15	16	17	18	19	20	21
4	22	23	24	25	26	27	28
5	29	30	31	1	2	3	4

February

Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat
5	29	30	31	1	2	3	4
6	5	6	7	8	9	10	11
7	12	13	14	15	16	17	18
8	19	20	21	22	23	24	25
9	26	27	28	1	2	3	4

March

Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat
9	26	27	28	1	2	3	4
10	5	6	7	8	9	10	11
11	12	13	14	15	16	17	18
12	19	20	21	22	23	24	25
13	26	27	28	29	30	31	1

April

Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat
13	26	27	28	29	30	31	1
14	2	3	4	5	6	7	8
15	9	10	11	12	13	14	15
16	16	17	18	19	20	21	22
17	23	24	25	26	27	28	29

May

Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat
18	30	1	2	3	4	5	6
19	7	8	9	10	11	12	13
20	14	15	16	17	18	19	20
21	21	22	23	24	25	26	27
22	28	29	30	31	1	2	3

June

Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat
22	28	29	30	31	1	2	3
23	4	5	6	7	8	9	10
24	11	12	13	14	15	16	17
25	18	19	20	21	22	23	24
26	25	26	27	28	29	30	1

June 17th - Schaub Lake Fly In

July

Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat
27	2	3	4	5	6	7	8
28	9	10	11	12	13	14	15
29	16	17	18	19	20	21	22
30	23	24	25	26	27	28	29
31	30	31	1	2	3	4	5

July 15th - Family BBQ & Fun Fly
July 26th - Night Flying (after club meeting)

August

Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat
31	30	31	1	2	3	4	5
32	6	7	8	9	10	11	12
33	13	14	15	16	17	18	19
34	20	21	22	23	24	25	26
35	27	28	29	30	31	1	2

September

Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat
35	27	28	29	30	31	1	2
36	3	4	5	6	7	8	9
37	10	11	12	13	14	15	16
38	17	18	19	20	21	22	23
39	24	25	26	27	28	29	30

September 30th - Schaub Lake Fly In

October

Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat
40	1	2	3	4	5	6	7
41	8	9	10	11	12	13	14
42	15	16	17	18	19	20	21
43	22	23	24	25	26	27	28
44	29	30	31	1	2	3	4

November

Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat
44	29	30	31	1	2	3	4
45	5	6	7	8	9	10	11
46	12	13	14	15	16	17	18
47	19	20	21	22	23	24	25
48	26	27	28	29	30	1	2

NOTE: November club meeting is a week earlier due to Thanksgiving.

December

Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat
48	26	27	28	29	30	1	2
49	3	4	5	6	7	8	9
50	10	11	12	13	14	15	16
51	17	18	19	20	21	22	23
52	24/31	25	26	27	28	29	30

December 31st - Membership renewal deadline

Safety Report

Bend Aero Modelers

Bend Oregon | AMA District XI | AMA Charter 2311

General

1. All pilots shall be current members of AMA. Proof of current AMA membership is required prior to flying at BAM.
2. Visiting AMA pilots and new members of BAM shall receive a safety orientation by one of BAM's Safety Committee members or in the absence of a Safety Committee member, an Executive Committee (EC) member prior to their first flight.
3. Pilots Shall ensure flight operations in accordance with AMA's safety code and these Field Safety Guidelines at all times.
4. Pilots shall ensure proper operation of their aircraft and associated equipment prior to use.
5. Pilots shall show courtesy toward others and apply common sense when flying at BAM.
6. Pilots are encouraged to verbally enforce safe flying practices as appropriate.
7. All guests, spectators, children and pets shall be supervised by a BAM member at all times while in side the flying field fence and are encouraged to remain behind the pit tables.
8. When working on armed electric airplanes in the pit area, pilots shall always secure/restrain the aircraft from moving on the ground or rolling off a pit table. No rotating propellers are allowed.
9. No running fuel airplanes are allowed in the pit area.
10. R/C cars and other surface vehicles are prohibited anywhere inside the flying field fence.
11. Smoking is prohibited anywhere inside the flying field fence and shall be carried out in a safe and respectful manner in the parking lot.
12. Consumption of alcoholic beverages or controlled substances before or during flight is prohibited.

Pre-Flight Operations

1. Pilots shall use the run-up stands when starting fuel-equipped aircraft engines.
2. For larger aircraft, pilots may use the taxiway rather than the run-up stands to start or arm their aircraft while keeping it restrained with the help of another pilot or any reasonable means.
3. For extended engine tuning and troubleshooting, pilots shall use the run-up stand provided for such use at the West end of the field by the porta-potties.
4. Pilots shall never leave their aircraft unattended while the aircraft is running or armed, even if it is restrained.
5. Pilots that use AM/FM radio equipment (50MHz, 53MHz and 72MHz) shall attach the appropriate frequency pin visibly to their transmitter's antenna whenever in use and shall place their AMA card on the respective channel pin on the frequency board in the clubhouse.

SAFETY REPORT continued

POPP'S FIELD SAFETY GUIDELINES

1. Pilots shall taxi aircraft only on the taxiways and runway. No taxiing is permitted in the pit area.
2. While flying, pilots must remain behind the safety fence and never block the taxiways.
3. Only pilots or a supervised helper are permitted beyond the safety fence (ie, to retrieve an aircraft).
4. Pilots shall verbally communicate their intentions during takeoffs, landings, flights and emergencies (ie, "taking off right to left", "landing left to right", "on the runway", "dead stick", "low pass" etc.
5. Pilots shall always fly their aircraft North of the centerline of the runway and remain within the approved fly zones. (see Fly Zone Map for details).
6. Landing aircraft have the right of way. Dead stick landings shall be called as such and given immediate right of way.
7. Pilots shall not take off from or land on the taxiways. This applies to all aircraft types, including rotary-wing and micro aircraft.
8. No more than five (5) aircraft shall be in the air at one time. This includes rotary wing and micro aircraft.
9. Pilots shall call all maiden flights prior to flight. All other aircraft shall be grounded until the maiden flight has been completed.
10. All hand launches shall be called to alert other pilots. Hand launches shall be performed either from the runway or the area between the runway edge and the safety fence.
11. Hovering craft such as, but not limited to, 3D planes, drones, etc are to hover North, clear of the runway to avoid interference with fixed wing aircraft operations. Whenever 3D planes or drones are flying, it is recommended to do so when fixed wing aircraft are not in the air.
12. FPV (First Person View) flight is only permitted when the pilot has a spotter per AMA regulations.
13. Gas turbine operations are allowed as long as they are in accordance with the AMA Gas Turbine regulations on the AMA website.
https://www.modelaircraft.org/content/ama-gas-turbine-program
14. When gas turbine planes are being flown, all other pilots are encouraged to relinquish the airspace to the turbine operations. An agreement between the turbine pilots and all other pilots for this recommendation should be discussed and agreed to.
15. All planes that are reconstructed after a substantial crash incident shall be considered as doing a maiden flight and all considerations for a maiden flight shall be adhered to.
16. If there are any questions that are not addressed here, the AMA Safety Handbook is available for reference at https://www.modelaircraft.org/safety

Updated 12/17/2022 By Safety Officer Andy Niedzwiecke

YOUR PASSION. HOBBY. ONE COMMUNITY.
Academy of Model Aeronautics 5161 E. Memorial Dr. Muncie IN 47302 | (765) 287-1256 | modelaircraft.org

Academy of Model Aeronautics
National Model Aircraft Safety Code

Effective January 1, 2018

A model aircraft is a non-human-carrying device capable of sustained flight within visual line of sight of the pilot or spotter(s). It may not exceed limitations of this code and is intended exclusively for sport, recreation, education and/or competition. All model flights must be conducted in accordance with this safety code and related AMA guidelines, any additional rules specific to the flying site, as well as all applicable laws and regulations.

As an AMA member I agree:

- I will not fly a model aircraft in a careless or reckless manner.
- I will not interfere with and will yield the right of way to all human-carrying aircraft using AMA's See and Avoid Guidance and a spotter when appropriate.
- I will not operate any model aircraft while I am under the influence of alcohol or any drug that could adversely affect my ability to safely control the model.
- I will avoid flying directly over unprotected people, moving vehicles, and occupied structures.
- I will fly Free Flight (FF) and Control Line (CL) models in compliance with AMA's safety programming.
- I will maintain visual contact of an RC model aircraft without enhancement other than corrective lenses prescribed to me. When using an advanced flight system, such as an autopilot, or flying First-Person View (FPV), I will comply with AMA's Advanced Flight System programming.
- I will only fly models weighing more than 55 pounds, including fuel, if certified through AMA's Large Model Airplane Program.
- I will only fly a turbine-powered model aircraft in compliance with AMA's Gas Turbine Program.
- I will not fly a powered model outdoors closer than 25 feet to any individual, except for myself or my helper(s) located at the flightline, unless I am taking off and landing, or as otherwise provided in AMA's Competition Regulation.
- I will use an established safety line to separate all model aircraft operations from spectators and bystanders.

For a complete copy of AMA's Safety Handbook please visit:
modelaircraft.org/files/100.pdf

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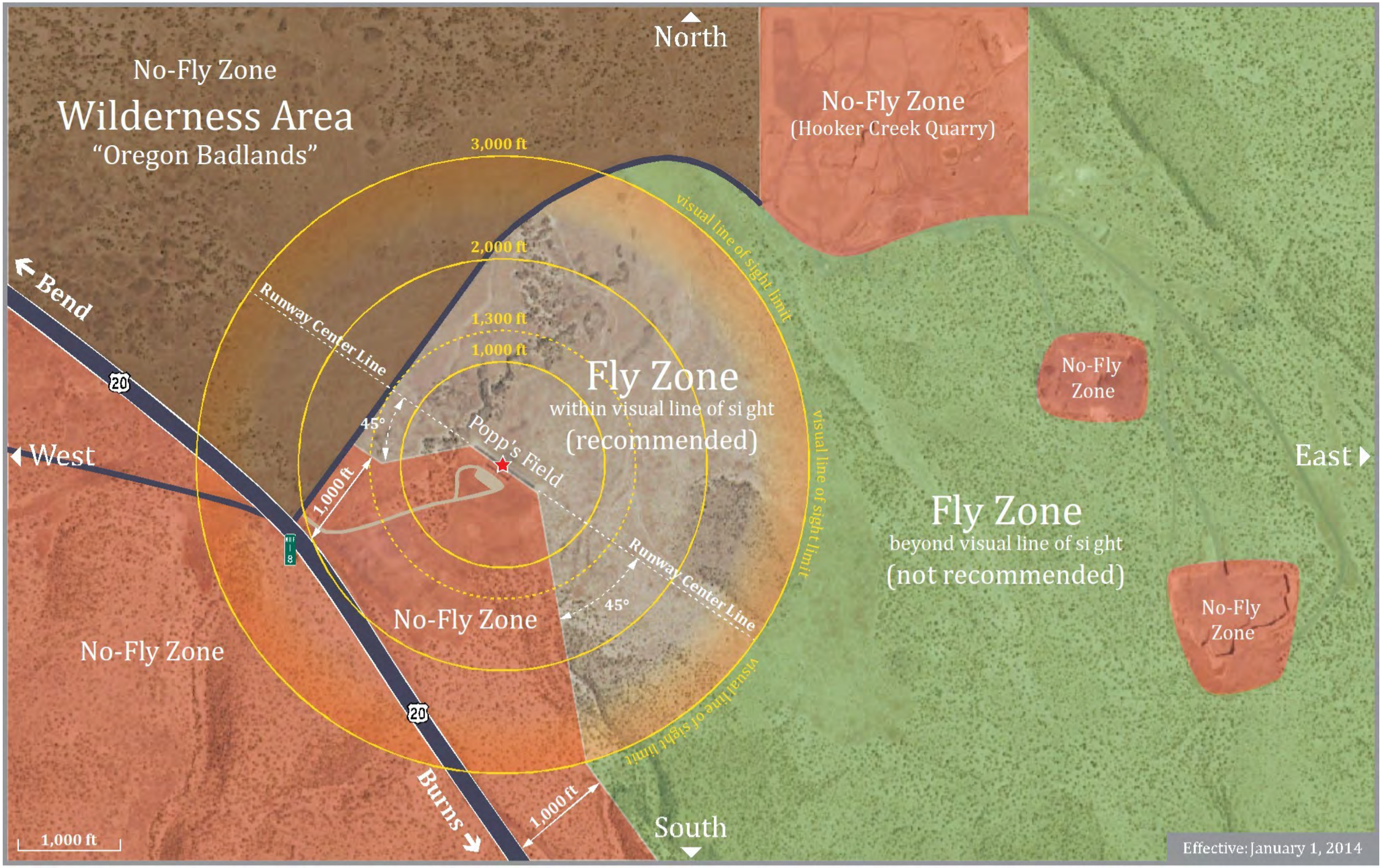

★ Popp's Field: Latitude 43° 56' 42.34" N / Longitude 121° 1' 16.21" W

No-Fly Zone

Wilderness Area (No-Fly Zone)