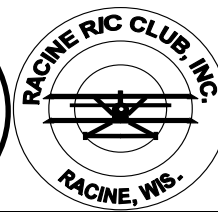




# THE FLIGHTLINE



**AMA CLUB 668 SINCE 1968**  
**RACINE RADIO CONTROL CLUB INC SINCE 1968**

**RRCC June Issue**  
**June 9, 2024 Newsletter**

**WE ARE ON THE WEB**  
**www.racinerclub.com**

**Club Officers**

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**Racine R/C Club Meeting Minutes**

May 19th, 2024

Time: 1:00 PM

Location: R/C Flying Field

**Open Meeting** - Jim opened the meeting at 1:00PM. 16 members in attendance.

**Welcome - New Members & Guests** – Gary Williams of Racine came out to the field to see what we are all about. He said he's flown RC in the past and is considering becoming a member.

**Minutes - Last Meeting** – There were no changes to the published minutes.

**Reports**

**President-** Jim Litwin gave a report regarding the trip to Joe Nall. There were 1,390 pilots in attendance this year, which is a record number of pilots at the event. Jets dominated the week. There was a particularly interesting, very large scale F14 Tomcat and F4 Phantom that flew very well. The only bummer was the amount of rain that came down during the week.

**Vice President-** Roger Nickolaus had nothing to report.

**Secretary/Treasurer-**Bob Johnson reported our checkbook balance remains strong and we are well positioned for any planned or unplanned club requirements.

Current membership as of this newsletter.

Senior Members	33
Open Members	10
Junior Members	3
Total	<u>46</u>

**Newsletter Editor** - Dennis Vollrath was out of town. Denny, we missed your technical message

this month!

**Field Chairman** - Trygve Smalley was unable to attend. Jim circulated a grass cutting roster for any member that can donate their time mowing the field.

Shelter walls were scheduled to come down Saturday June 1<sup>st</sup>, however due to the rain forecast this has been postponed to Saturday June 8<sup>th</sup> at 8:00AM. This is necessary to comply with the villages permanent structure rule.

**Tractor Chairman** - Eric Armantrout was not able to attend.

**Web Master**-Ron Hayes had nothing new to report.

**Safety Officer**-Darrell Hossalla reminded everyone that after a flight we need to taxi toward the fence, then turn to the pit area opening. Stop short and turn so the prop is not pointing at you, shut down then manually retrieve your airplane. Safety first!!

**Compost Director**- Chuck Roberts reported there is one compost space open in September that needs to be filled.

**Old Business**- Nothing to discuss.

**New Business** – Shelter walls must come down Saturday June 8<sup>th</sup> at 8:00AM. Please come out and help if you are available....

**New Pilots** – Tim Brehm was signed off by Hoss and Roger. Congratulations Tim!!

**Show & Tell** – Nothing this month.

**Raffle Drawing** – Tim Brehm won the club raffle and donated all to the club for a total of \$31.00. Thanks Tim!!

**Close Meeting** – Jim closed the meeting with a reminder the next club meeting will be June 9th at 1PM, at the field club house. (One week early due to Father's Day on June 16<sup>th</sup>.)

### **JIM'S CORNER**

This month's newsletter is a week early due to our monthly club meeting being a week early. We moved the meeting up because the normal date fell on Father's Day, and we want all the father's to be able to be with their families.

The weather has not been very kind to us. Lots of rain. The grass is growing like crazy, and it delayed our taking down the walls of the shelter by a week. We simply cannot put the walls and other wood away if it is wet from rain. It gets covered in mold. It happened before, and we are not going to repeat that again.

I would like to caution members working the last shift at the compost site, to insure everyone is out of the compost site before locking the gates. We had some-

one locked in, unseen, probably back by the wood chip pile. They ultimately called the Village Police, then Village DPW, and then me. The police were give the gate lock codes and were able to get the resident out. First time it's occurred in many, many years, but a little embarrassing.

A sign has been posted at the compost site, but I will reaffirm here; we do not need any more large chunks of wood dropped off by us. We have more than enough to split before winter.

As the summer progresses, get some flying in. There are days with some nice weather, so enjoy it!

As I mentioned above, this month's club meeting is a week early, on Sunday, June 9thm at 1 PM.

See you then.  
Fly Safe & Have Fun  
Jim Litwin  
President

(Editor's Note:

FYI, when I did the compost duty, before locking the gate, I drove around the back side of the big piles of brush and stuff to make certain no one was hiding back there!)

## Denny's Stuff

### Receiver Battery Reviews

Over the past month or so, I've had a few questions on battery types that we use in our RC model airplanes. So, here is a bit of information on receiver batteries that we all use, where the life of our model airplanes absolutely depends on them.

Starting off, there are basically only three types of batteries used for receiver/servo power in our model airplanes. They are LiPo's, LiFe's and A123's. Historically, we had NiCad's then NiMH cells.

These "Ni" type cells are seldom used in our larger model airplanes. The NiMH cells simply can't handle the loads the modern servos place on the receiver battery pack. And, I've got tests that show the NiCad and NiMH cells pretty much crap out at below freezing temperatures.

For the record, those LiPo's and LiFe's are sealed in a plastic baggie, compared to the hermetically aluminum case sealed A123 cells. More later.

All three of these types of batteries are based on the Lithium element, with variations on the main ingredient that are used with the different battery types.

Pretty much the first Lithium battery chemistry that became widely used is the A123 cells. They were used in the 36 Volt DeWalt battery operated drill back near 20 years ago.

FYI, I ordered one of those Dewalt drills

for where I worked to be used for drilling a bunch of 3/4 inch holes in some stainless steel substation cabinets located in some electric utilities outside storage area.

That drill came with a piece of 1/2 inch pipe to handle the torque that drill put out. And, there warnings to install and use that pipe to reduce the chance of injury if the drill bit got stuck.

I bought a bunch of spare DeWalt battery packs back in 2006 for electric motor power in my electric models. Since then, these cells have become available through several retail markets.

These A123 cells have a patented "Lithium Nano-Phosphate" technology that allows running them at a maximum of 40 or 50 Amperes under load.

The maximum voltage allowed on an A123 cell is 3.6 Volts DC during the charge cycle. This quickly drops down to 3.3 Volts DC during the discharge cycle.

Next in line is the LiPo, or Lithium Polymer cells. These cells are used for electric powered model airplanes, along with a few two cell LiPo battery packs that are used for receiver power, using the High Voltage servos.

For electric motor powered models, LiPo's have a significant advantage over the A123's, with lower internal resistance, and less weight than the same energy capacity of an A123 battery pack.

In comparison, an A123 pack has about

1/3 more weight than an equivalent LiPo battery pack with the same Horse Power Hour capacity.

But, with these advantages, the LiPo batteries absolutely **MUST** be stored at around 3.70 Volts per cell. This is known as the so called "Storage Voltage" on a LiPo cell.

If you charge a bunch of LiPo battery packs for a day's flying, you must run all of them down to around 3.7 Volts DC per cell, or around 20% state of charge.

One characteristic of a LiPo cell is that their voltage is directly related to how much MilliAmpere Hour capacity is left in the pack. At 4.2 Volts DC per cell, the pack is fully charged. At 3.67 Volts DC per cell, the battery is pretty much completely discharged.

If these cells are left at full charge for any length of time such as a day or two, these batteries **WILL** be damaged. Permanently. One sign of damage is their baggie wrap expands like a balloon.

And, if you run these LiPo cells below perhaps 3.0 Volts DC with no load, the battery pack **WILL** be damaged.

Compare that to an A123 battery pack. One characteristic of these A123 cells is their voltage during discharge is pretty much flat, dropping only a percent or two between 80% and 20% state of charge. As such, there IS no "Storage Voltage" requirement for the A123 cells.

And, these cells can be left at full charge for a day, a week, a month or a year with no effect on the cell.

Many of our RC members have found that these A123 receiver packs retain some 95% of their state of charge after a

full winter shut down.

And, you can run these A123 cells down to 2.0 Volts per cell and still be in the manufactures minimum voltage specification.

As for how long these cells will last, the LiPos typically will last around 500 charge cycles, properly treated, while **NEVER** running their voltage below 3.5 Volts DC.

Compare that to the A123's that will last several thousand charge cycles, if they are not discharged below around 2.0 Volts DC. And, I've got many 10 year old A123 packs that are nearly as good as a brand new pack.

And, the A123's are unaffected under temperatures below freezing. (Yup, I've tested them at 30 degrees F)

So, what are the negatives of the A123's. One big one, that previously mentioned flat discharge voltage while the battery is being drained under load.

That flat discharge voltage prevents using the batteries voltage to determine if it is safe to fly one or two more flights.

The A123 voltage drops off very rapidly when near fully discharged. I've actually flew West of the field at full power on one of my A123 battery powered models. Then turned around, and found the electric motors ESC killed motor power due to A123 low voltage. Yes they do drop off that fast.

So, several years ago, I compiled a PDF file on my version of the proper use of the A123 and LiFe receiver batteries in your model airplane.

I've attached a copy of that PDF file with

the newsletter email copy for your use.

Now, for those LiFe receiver battery packs. Just what are they?

Well, they are charged just the same way as the A123 cells, but at a lower maximum charge rate.

You can charge the 2500 Mah (2.5 Amp Hour) A123's at the manufacturers maximum specification of 10 Amps. This will recharge a fully discharged A123 cell in 15 minutes.

If you have any question as to whether your A123 cell is fully charged, your charger has the capability to show the voltage on each cell. Once the cells hit 3.60 Volts DC, it's fully charged. That simple.

The LiFe's can not be safely recharged at the same rate as the A123's. Generally, the LiFe's and the LiPo's can be safely charged at "1C". So, if your LiFe or LiPo pack is rated at 3000 Mah, that's 3.0 Amp Hours.

So a safe charge rate IS that 3.0 Amps. And, if you have a small 400 Mah (MilliAmpere Hour) cell, maximum charge rate is 0.4 Amps.

Note that the LiFe's can not handle the same high discharge currents of the A123 cells. As previously mentioned in this column, you can discharge an A123 cell at 40 Amps, something I do all the time in all of my electric models.

But these LiFe's are limited to perhaps 10 Amps peak current on a 2200 Mah LiFe battery pack. FYI, that 10 Amps is plenty enough to handle models up to around 80 cc gassers.

Now, about receiver battery reliability. Naturally, you never want to have any issue with the receiver battery in your models. That is one reason it is wise to pro-

vide dual receiver batteries for your larger gasser models perhaps 30 cc and larger.

Each receiver battery should have its own high quality receiver switch, and each switch lead should plug into a separate channel on your receiver.

I've covered those crappy slide type receiver switches many times in the RRCC newsletter. Found to many of them that use open frame four pole switches where only one pole is used. The other three poles are not even soldered in! Real crap.

One of our RRCC members lost two 30 cc gassers a couple of years ago due to those crap slide switches.

Back to battery reliability. As mentioned, those A123 cells are hermetically sealed in an aluminum jacket. But, the LiFe and LiPo packs are encased with a plastic baggie.

Should there be a tiny pin hole leak in that baggie, the cell involved will slowly "Dry Out" resulting in drastically reduced MilliAmpere Hour capacity after a year or three.

If these LiFe packs are cycle tested once a year or so, they work just fine. But in my opinion, they absolutely MUST be tested once a year or so.

Yes, I've found a half dozen LiFe receiver packs in our club membership where one cell dropped below 50% capacity. The only way to find it is to cycle test them.

For the RRCC membership, I can perform these cycle tests on your LiFe receiver packs, free of charge. Just let me know after the RRCC meeting.

Denny Vollrath  
RRCC Editor.



Trig's Bulldog



It took Trig nearly an hour to assemble this model ready to fly!

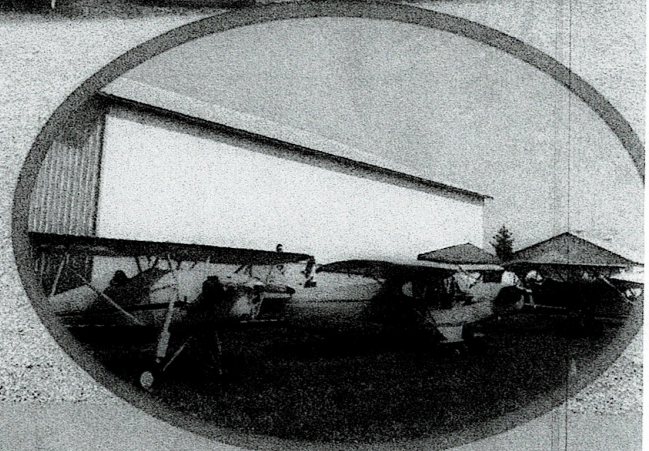
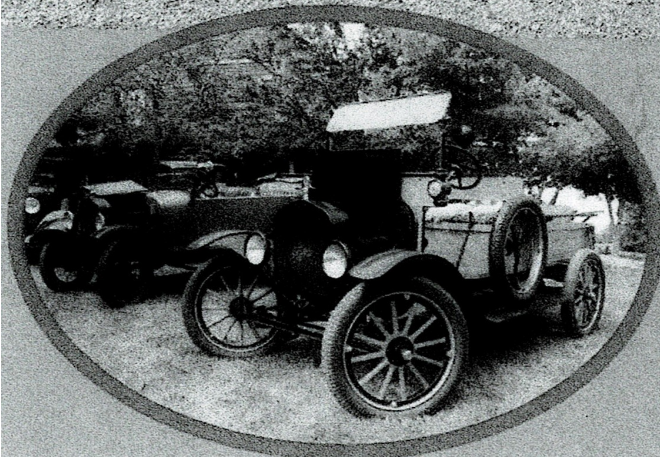
# 2ND ANNUAL WINGS

&

# WHEELS

**JUNE 8, 2024**

- 10:00 AM
- AVIATION  
PRESENTATION-11:00
- LUNCH-12:00
- CAR SHOW
- AIRPLANE RIDES



**11711 4 1/4 MILE RD  
FRANKSVILLE, WI 53126**

FOR INFORMATION OR QUESTIONS  
ABOUT THE EVENT, CONTACT  
JIM KRUEGER 414-520-8060  
JUSTIN NIEMYJSKI 414-406-3690

RAIN OR SHINE

AIRPLANE RIDES WEATHER PERMITTING  
SOME EVENT DETAILS MAY CHANGE WITHOUT NOTICE

\*\*\*Niemyjski Airfield is a private airport. You  
must have prior permission to fly in. Please  
contact Justin for more information.

## Compost Duty Roster

05/08/24	12-2	Chuck Roberts	Helmut Schmidtke	
05/08/24	2-4	Dennis Krzyzanek	Helmut Schmidtke	
05/08/24	4-6	Chuck Roberts	Helmut Schmidtke	
05/15/24	12-2	Tim Brehm		
05/15/24	2-4	Rich Smentek		
05/15/24	4-6	Tim Brehm		
05/22/24	12-2	Terry Peterson		
05/22/24	2-4	Jason Fisher		Steve Knackert
05/22/24	4-6	Trygve Smally		
05/29/24	12-2	Trygve Smally		
05/29/24	2-4	Steve Knackert		
05/29/24	4-6	Justin Francisco		
06/05/24	12-2	Mat Holl		
06/05/24	2-4	Steve Knackert		
06/05/24	4-6	Justin Francisco		
06/12/24	12-2	Mat Holl		
06/12/24	2-4	Steve Knackert		
06/12/24	4-6	Justin Francisco		
06/19/24	12-2	Jerry Rose		
06/19/24	2-4	Ray Fisher		
06/19/24	4-6	Ray Fisher		
06/26/24	12-2	Jerry Rose		
06/26/24	2-4	Jerry Rose		
06/26/24	4-6	Dan Pozel		
07/03/24	12-2	Jeff Lee		
07/03/24	2-4	Jeff Lee		
07/03/24	4-6	Jeff Lee		
07/10/24	12-2	Doug Krage		
07/10/24	2-4	Ray Fisher		
07/10/24	4-6	Ray Fisher		
07/17/24	12-2	Mat Holl		
07/17/24	2-4	Jason Fisher		Steve Knackert
07/17/24	4-6	Dan Pozel		
07/24/24	12-2	Steven Navone		
07/24/24	2-4	John Boldt	Steven Navone	
07/24/24	4-6	Steven Navone		
07/31/24	12-2	Chuck Roberts		
07/31/24	2-4	Jason Fisher		Steve Knackert



01/21/24	Sunday	Club Meeting		07/22/24	Mon-Sun	EAA Kid Venture
02/18/24	Sunday	Club Meeting		08/03/24	Saturday	Bong Eagles Free Flight
03/02/24	Saturday	Awards Banquet		08/03/24	Saturday	Marks Float Fly
03/17/24	Sunday	Club Meeting		08/04/24	Sunday	Circle Masters
04/01/24	Monday	Change Lock Codes		08/10/24	Saturday	Electrons Boy Scouts
04/06/24	Saturday	Model Engine Collector		08/15/24	Thur-Sat	Fon Du Lac War Birds
04/14/24	Sunday	Club Meeting		08/18/24	Sunday	Fon Du Lac Fun Fly
05/19/24	Sunday	Club Meeting		08/18/24	Sunday	Club Meeting
06/01/24	Saturday	Shelter Tear Down		08/24/24	Sat-Sun	Circle Masters Demo
06/01/24	Saturday	Circle Masters		08/25/24	Sunday	Open House
06/08/24	Saturday	Fon Du Lac Fun Fly		09/07/24	Saturday	Electrons Fly/Swap
06/09/24	Saturday	Club Meeting		09/08/24	Sunday	Watertown Demo
06/22/24	Saturday	Sky Ranch		09/14/24	Sat-Sun	Electrons Pattern
07/06/24	Saturday	Bong Old Timers		09/22/24	Sunday	Club Meeting
07/06/24	Saturday	Pebble Creek Flyers		10/05/24	Saturday	Shelter Set up
07/07/24	Sunday	Electrons Scale		10/19/24	Sat-Sun	Maker Faire
07/13/24	Saturday	Astrowings Charity		10/20/24	Sunday	Club Meeting
07/20/24	Saturday	Rams Helicopters		11/17/24	Sunday	Club Meeting
07/21/24	Sunday	Electrons Electric fly in		12/15/24	Sunday	Club Meeting
07/21/24	Sunday	Club Picnic – No Meeting				

# Tentative 2024 Schedule