

## Next Mtg ???

## Fun Fly

**SIG 31st Annual Father's Day R/C Fun-Fly**  
**June 18 & 19, 2005**  
**SIG Field**  
**Montezuma, Iowa**  
**For more info**  
**Call 641-623-5154**

## Field Location

<http://webpages.charter.net/flyers/>  
**Check it out! Our web site!!!**

## Publishing Notes

President..... Jack L. Bena  
Vice President .....  
Secretary..... Dale Anderson  
Treasures.....Ken Knutson  
Newsletter / Web Site ..... Gary D. Seira

<http://webpages.charter.net/flyers/>

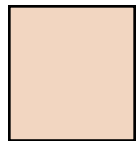
Information and articles for newsletter should be sent to: Gary Seira  
1404 10th St NW  
Austin, MN 55912  
gary.seira@charter.net



Once you are on Highway 251 turn north on Highway 34. The field is about a half mile north. Turn East before you cross the bridge. You will see the wind sock.



Freeborn / Mower  
Radio Control Flyers  
307 West Oakland Ave  
Austin, MN 55912





# Freeborn / Mower Radio Control Flyers

June 2005

AMA Charter 1202



## The Prez Sez Jack Bena

Hello Fellow Flyers,

The biggest topic in the month of May was “field damage” by some idiots. Several cars and/or pickups (several tire track sizes) have seen fit to do “donuts” in our flying field during the rainy period. We have been hit at least 5 times as of 5/23. I went down to the sheriff’s office twice and filed vandalism reports. I also had a deputy out to the field to file a third report. I was lucky that the deputy turned out to be a former member of our club whom I taught to fly. He was very thorough taking pictures of the damage and asking neighbors to call if they saw anyone out on the field after dark. He let the neighborhood know that the law was informed. Ron M. got hold of a lawn roller, and I rented one. We rolled the heck out of the field, but it didn’t do much except the small bumps, maybe. Dale A. and his wife Ann, hauled out dirt and did a beautiful job of filling the deepest ruts at the time on the west side. Some of the damage just tore the sod off, and may grow back fairly even. There are still some deeper ruts to watch out for. I’ve held off doing anymore filling until the vandals stop or the field dries up. I checked with our resident lawyer, Pete P., about out liabilities if boards with nails were put behind the 6 in. line of grass separating our field and parking lot. He said that we could be sued even though they were trespassing, if someone got hurt. Bad Guys win again!!!!

There is a Swap Meet/Open Fun Fly at the Marion R/C Flyer’s Field Saturday June 11 8 a.m.- 4 p.m.. No landing/table fees-bring your own table. Also mark your calendar for Lake Mill’s Fly-In on Sun July 10. I don’t have anything on Owatonna’s or Claremont’s fun flies yet. Let us support our fellow area club’s activities as they have supported us.

**That’s all folks     Jack**

# Other Stuff

## AMA News Release

May 25, 2005

MUNCIE, IN -- The Academy of Model Aeronautics (AMA) will launch the 79th National Aeromodeling Championships (historically known as the "Nats"), the world's largest model aviation event, commencing June 1, 2005 in Johnson City, TN, with Indoor Free Flight activity. Action at the International Aeromodeling Center in Muncie, IN begins July 4. More than 1,000 participants are expected to fill the skies with virtually every form of flying model imaginable. For a schedule and more information about this thrilling contest that covers six weeks and 168 separate events, go to [www.modelaircraft.org/events/](http://www.modelaircraft.org/events/).

Follow This Event as it Unfolds!

Sign up now for AMA's new daily electronic newsletter, NatsNews, available FREE to all members. To subscribe, send your e-mail address to: [yolandaj@modelaircraft.org](mailto:yolandaj@modelaircraft.org). You will receive a daily e-mail with a link to the newsletter. Or, bookmark [www.natsnews.org](http://www.natsnews.org) and log on daily beginning June 1, 2005. The newsletter will cover day-to-day events in a bold, new style that will bring the Nats to life on your computer screen. Expect scores, photos, and "blow by blow" descriptions of the action taking place, as well as a "behind the scenes" look at the participants and the technology they bring with them to win one of the oldest and most prestigious model airplane contests today. If you can't be there but wish you could be, [www.natsnews.org](http://www.natsnews.org) could be the ticket!

Lonnie Estep  
Event Coordinator

## Keep track of your hobby

from the Capital Area Soaring Association, Rockville MD  
by Lawrence Hare

I keep a log book for each of my aircraft. It is a small ringed notebook, one per airplane, which I assiduously update after each trip to a flying field. Even so, I could not keep track of all costs, modifications, add-ons, and all the other paraphernalia that I would like to keep track of until I found the Flight Log at: [www.lammers.ca/FlightLog/](http://www.lammers.ca/FlightLog/).

I started using it and found it extremely useful. Shawn Lammers, the creator, is constantly updating the program, listening, and helping the users. It is free, although I think he will get an offer eventually, and then it will cost!

He uses a Microsoft Access database as an engine, and is able to pull together different views of equipment, models, log books, transmitters, etc; to provide a variety of reports. Not the least amongst them, and quite fearful in its purport, is a cost summary. Ouch! The amount I spent over the years is, perhaps, best not known, but easily done by simply not entering dollars.

## Notes from an e-flier

from the Prop Masters RC Aero Club, Warrenville IL  
by Mitch Gerdisch

Flying electric airplanes is just one more facet of this great hobby and more and more pilots are trying electric flight. Therefore, for those budding e-fliers, I thought I would share a few thoughts from my four years of experience in this part of the hobby.

1. Once that battery is plugged in, assume the propeller has only one goal in life and that is to hurt you. Even with throttle locks on transmitters and switches on speed controllers, once you plug that battery in, you want to make sure you keep away from the propeller.

When a gas or glow-motor driven propeller hits something it will generally stall the motor, but not without doing some damage. An electric motor will not stall; it'll just draw more current in an attempt to keep going. So, an electric driven propeller can do much more damage. Thus, it must be given your utmost respect.

The switches on speed controllers are no guarantee either. I've had motors start spinning even with the speed controller switched off.

2. Use quality connectors. I see some folks using Tamiya connectors. Tamiyas are not really suitable for RC flight since it's not a matter of if they will fail, but rather a matter of when. For small models, Dean's makes micro connectors which are well liked. For larger models, Sermos (AKA Anderson Powerpoles) or Dean's Ultra connectors are liked as well. These are just a couple of

choices, but the bottom line is to use a quality connector.

3. Finding a good motor, propeller, and battery combo is a bit science and a bit art. On a glow model, you generally combine a known engine and a known propeller (eg. .40 engine with a 10 x 5 propeller or something like that). In electrics, it can be a bit more complicated since you also have to account for the number of cells, plus there are a number of motor and gearbox combinations. The easiest thing to do is simply find a combination someone else is successfully using in a similarly sized model and copy that. One source for this sort of information is the electric power systems forum like [www.rcgroups.com](http://www.rcgroups.com).

I hope this helps those thinking about trying out electric flight. And, feel free to contact me at [telemitch@wowwav.com](mailto:telemitch@wowwav.com) if you have any follow-up questions.

## Know noise regulations to avoid sound problems

by Bob Hoff

Technical note: I am completely aware that one you cannot measure noise, as you can sound, but the author was making a point that I think is very important so his article is reprinted as he wrote it.

Sound from RC models powered by internal combustion engines, along with real estate development is one of the major causes of the loss of flying fields. We lost our field because of noise complaints, even though we were not violating county noise limits. The tipping point was when pattern contestants practiced too early in the morning and flew too near housing.

## The Science of Noise

Noise can range from a single tone to a complex spectrum made up of many tones or frequencies of different magnitudes. Model aircraft noise is closer to white noise than it is to a single tone, so many of the physical laws that apply to white noise can be used to reach useful conclusions about model aircraft noise.

White noise contains components at all frequencies. Noise from RC aircraft is composed of four components, engine intake, engine exhaust, airframe vibration, and propeller sound. Engine exhaust and propeller noise are the most important contributors.

The magnitude of noise is usually measured and expressed as sound pressure level (SPL) in decibels (dB) (on the A-scale of the sound meter) relative to 20 micronewtons per square meter. Meter frequency response on the A-scale approximates the human ear.

The physics and math of the situation dictates that an increase of 6 dB represents a doubling of sound pressure level. In theory knowing the SPL at one distance, the SPL at any other distance can

# Other Stuff

be calculated. In practice it provides an inexact, but useful estimate.

The dominant components of exhaust and intake sound of two-cycle engines are at a fundamental frequency equal to the rpm of the engine and its harmonics or overtones (multiples of rpm). For four-cycle engines the fundamental frequency is half the engine rpm. Exhaust sound is normally reduced by using mufflers.

A research project at N.C. State University, sponsored by AMA, concluded in December 1989 that, "Noise generated by the propeller is the dominant source of model aircraft noise if reasonable efforts are made to reduce exhaust noise."

For many years factory mufflers for many engines allowed levels of noise did not meet the criterion of "reasonable" efforts. Today some factory mufflers are better and after-market mufflers like the Davis Diesel Soundmaster can provide up to 6 dB reduction over a factory muffler. I had a .40-powered airplane fitted with a Davis muffler, and it was sometimes hard to tell if the engine was running when the airplane was high and at a distance.

Propeller noise can be reduced by selection of a propeller design with low noise characteristics and by keeping propeller tip speed below Mach 0.5. In his "Sound Advice" column in the February 1999 issue of Model Aviation Ian Maclaughlin said that keeping the product of rpm in thousands and propeller diameter in inches below 120 will keep propeller noise below 90 dBA, as measured at a distance of nine feet. At a product of 120 this is approximately Mach 0.45. A three-bladed propeller is sometimes used to provide the desired thrust while keeping tip speed down.

Airframe vibration noise depends on engine vibration, mounting, and on airframe rigidity. It can be reduced by engine shock mounting with the additional benefit that wear and tear on the airplane is reduced.

In searching the literature I find very little about levels of and suppression of engine intake noise. I suspect that one of the reasons is that it is difficult to separate it from the other sources so it can be measured. There are aftermarket intake air filters that might reduce intake noise somewhat, but this is not likely to make a noticeable improvement.

David Gierke reported in an article in the December 1995 Model Airplane News that, with a good muffler, he was able to determine that propeller noise was 92 dBA, engine exhaust noise was 91 dBA, and intake noise was 89 dBA. The total noise was 95.5 dBA.

You will note that the total noise is not the sum of the individual sources. If two uncorrelated sound sources are combined on an energy basis, the largest increase that can result is 3 dB in sound power. Combining two unequal noise sources will result in an increase of less than 1 dB in power. For example, a chart in the General Radio Handbook of Noise Measurement shows that if two sources differ in power by 6 dB, the combined level will be increased by only 1 dB above the loudest of the two. Remember this is sound power we are talking about, not sound pressure level that we measure with a sound meter. A 3 dB sound power increase results in a 6 dB sound pressure level increase.

Two noise sources are uncorrelated when the causes of the noise are unrelated. The noise from two different airplanes is uncorrelated. Propeller noise and exhaust noise generated by a single airplane are correlated because they are both a function of rpm of the same engine.

## Noise limits and regulations

Chapter 31B of the Montgomery County Code specifies that noise at a receiving residential area shall not exceed 65 dBA in the daytime. DCRC Field Rules, as published in the June 2000 issue of the club's newsletter specified that, "At no time will the County's 65 dBA sound limit, as measured at the property line, be exceeded by activities at the field." Rules also state, "Models will comply with AMA sound rules for RC Aerobatics which are 96 dBA measured at three meters from the centerline of the model with the model standing on concrete or macadam, or 94 dBA when standing on earth or short grass (with the engine running at full

power)."

(See Paragraph 4.2 of the section on Radio Control Aerobatics of the AMA Competition Regulations and its "Sound Addendum" for details of the specified measurement procedure).

Measured results on the ground are affected by the elevation of model and meter above the surface, the nature of the surface (hard, grass, etc.), the orientation of the model with respect to the meter, wind velocity and direction, nearby reflecting surfaces, and of course, engine rpm. Any noise measurement made should include a record of these conditions. The field rules contain provisions for granting exceptions for models that exceed these limits but meet property line limits. They also provide that members can have their models tested by the sound and safety officer who will issue a sticker to affix to their airplane. The AMA Membership Manual does not specify noise limits for sport flying, although the AMA encourages that model aircraft noise be held to a minimum.

## Assessment and enforcement

When our new field opened, Walt Gallagher, former sound and safety officer, encouraged members to submit their models for noise measurement. After accumulating considerable data, he reported in the October 2000 newsletter that the noise output of most midsize models does not exceed the limits specified for measurements on the ground and that they did not come anywhere close to exceeding the 65 dBA limit at the property line in flight.

Some midsize and large models were found to exceed the limit allowed in ground measurement. They were and will be required to take corrective action or to submit to in-flight measurements to make sure that they do not exceed the 65 dBA limit at the property line. The field rules state: "Special exceptions will be granted for models that exceed the AMA limit but do not violate the county's 65 dBA limit. These airplanes must undergo additional in-air sound measurements made at the property lines. These airplanes must be flown alone at all times with no other models in the air." In the light of these findings, noise measurements are not now routinely made on any size models unless requested by the owner or considered advisable by the sound and safety officer.

It should be pointed out that assessment results confirm that ground measurements give a useful indication of what can be expected in flight, but in-flight measurements are still needed in some cases because of engine unloading in flight, differences in airframe vibration and other factors that cannot readily be taken into account during ground measurement.

## So what?

As responsible RC modelers, our members should take the following steps to minimize noise and the risk that it will contribute to the loss of our flying site.

1. Measure the noise output of your models to be sure you are in compliance with the limits set by the applicable rules and regulations.
2. Use the best muffler you can afford.
3. Shock mount your engine.
4. Consider using a four-cycle engine because the lower fundamental frequency of its exhaust is less annoying.
5. Use a propeller of low noise design and keep the tip speed below Mach 0.5.
6. Fly within the boundaries established for our field.
7. Wear ear protection when starting and adjusting your engines. Noise levels during these activities can cause permanent hearing loss that occurs slowly over time. You won't notice it until its too late.