THE KNIGHT FLYER

Jan - Feb - Mar **2005**
Editor: **Jim Devlin**

George Gard elected for 2006

Elections proceeded smoothly this year. Apparently, many of the incumbents decided to stay on.

And those who were unable to, found eager replacements among the club membership.

We are truly blessed in having people who are interested in investing their time and energy for the benefit of the rest of us.

We would like to congratulate all of the new officers and thank those who served so well.

1st row: George Gard, Jim Pravel, George Fox. Absent: Dave Kobie
2nd row: Orv Chatwood, Bob Rodgers, Bob Waldraff, Mark Chamberlain.

Christmas Party

The annual Christmas party appeared to be a little subdued this year.

It's true that the weather was not conducive to a record breaking attendance.

Lake effect snow was falling steadily during the evening, making driving somewhat difficult.

About 35-40 members along with some of their family did arrive to enjoy the festivities.

Part of the reason, also may have been the fact that the elections, normally a raucous part of the December meeting was pretty much a settled item even before the meeting began.

It even appeared that the Pizza was ordered beforehand to arrive at a precise time, 8:00 pm, a most un- characteristic element of this event.

No, Santa did not bring a new slate of officers.

Whatever the reason, the party went smoothly and soon every one was deep into the Pizza.

With lots to talk over from the season past and much to think about for the season future, everyone settled down and the conversations began.

An excellent rack of goodies brought in by members decked the dessert table.

It was a great time. Even the weather eventually cooperated. The lake effect snow let up in time for the ride home.

2006 Registration is Currently Due

Membership dues must be received before Jan. 13, 2006 or you will be dropped from the roster. Delay to Feb. 3rd by request only (Call 648-0667).

Please use the form below to renew your membership by mail.

Remember, flying privileges at the Nike Site and the North Collins fields are restricted to club membership only!

Return the form along with your payment and a copy of your 2006 A.M.A. card to: George Fox, 42 Dudley St., Hamburg, 14075. You must present a current A.M.A. card or a copy of same.

Please make sure your email address is current & correct.

2006 Dues Renewal Form

Please print:
Name:_____ A.M.A. # _____
Address: _____
City: _____ State: _____ Zip: _____
Phone: _____
Email (If you have one): _____

Great Turkey Fly-in

It was a cold, windy day in October.

Word had gone out that there would be an impromptu gathering complete with turkey dinner at the North Collins field that Sunday afternoon.

OneTurkey, ready to go.

Bill's plane sheds winter coat.

Your editor, well known for his aversion to flying in any weather under 60 degrees or wind over 20 mph, drove out to NC to investigate.

Arriving at the field in the early afternoon, the field was virtually empty. Huddled about the fire in coats, gloves and hats were the Scagliones.

They had been assured that indeed there would be turkey dinner that afternoon. It didn't look good.

Briefly, Bill challenged the wind with his 1/4 scale.

An hour went by. Then, one by one folks started showing up.

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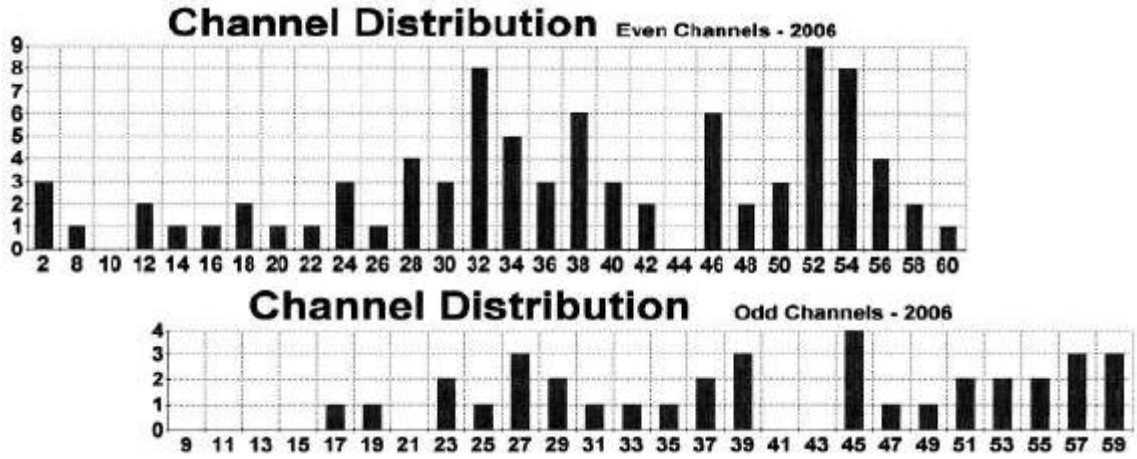
The 2006 Flying Knights Channel Update

Each year the club tries to have a survey of the current transmitters, so that members know how many are already on the same channel before they make a new purchase.

Everyone would like to avoid the situation of ending up at the field with someone else on the same frequency.

Even though some radios remain the same, others are added or retired. We attempt to show the current status

The results shown below are based on a response of 77% of the members.



Mall Show	**Fri - Sat - sun March 4,5 & 6 th. Mckinley Mall**	**Set-up thurs. nite Mar. 3rd -- 9 p.m.**

Email meeting card program

The transition to email meeting cards was undertaken in order to defray the postage costs associated with our mailings. The average mailing costs us about $15 each month, ($180 per year). About 2/3 of the membership currently have email.

Each email contains the card image as an attachment. Each email is also marked with a return request, so that receipt can be verified. When you get the card, just click on the return request.

One of the problems is that, some of the email addresses are incorrect or no longer exist. We have been backing up the bad emails with a post card, but this takes extra effort as well as increasing the cost.

If you have not been getting your email cards, send a note to jdevlin@netacc.net to ensure that we have your correct address.

From the Prez:

Four (4) years , what a great experience!

Thank you to the membership, for your co-operation and great support in all endeavors these past four years. Your efforts have improved the club activities and our flying fields.

A very special thanks to the board members and officers with whom I served.

Your talent and enthusiasm makes this the great club that it is.

Speaking for the membership, we thank George Gard for coming forward to serve another term as president. We welcome his efforts.

p.s. You can be assured I will not disappear. Ron Wojcik, president

Watts This ?

When we fly our electric models, we use electrical energy for power. Gas engines use chemical energy.

The model as it moves through the air, however, is using mechanical energy.

Mechanical energy is the ability to move and shake things.

Energy and work are two faces of the same coin. They are measured in the same units.

Energy means the capacity to move something. Work is actually moving it.

If we lift a book, we apply a force to it. The force equals the weight of the book.

The force comes from the "energy" in our muscles.

When we actually lift the book, we convert the energy of our muscles into "work". See figure 1.

Force causes something to move. It is measured in "pounds".

Work is a force applied for a distance. It is measured in "foot-pounds".

Energy is the capacity to do work. It's also measured in "foot-pounds".

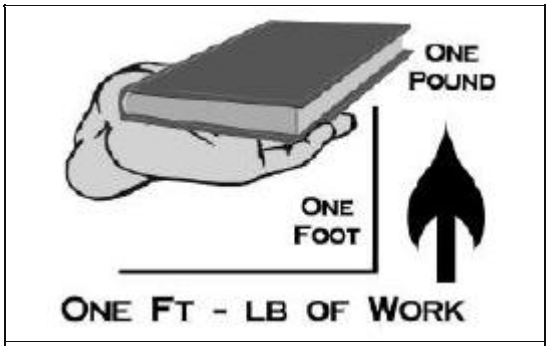


Fig. 1

When we raise a two pound book two feet, we do "work" equal to 4 ft-lbs.

If we do that in one sec, our rate of work is 4 ft-lbs per sec.

This is power. It is the rate at which we do work.

If we continue to raise the book to ten feet (taking 10 seconds), our total expenditure of "power" equals 40 ft-lbs for 10 seconds or 4 ft-lbs/sec.

As shown in fig.2, power must be supplied continuously to an airplane to get it off the ground and fly.

Whether we fly a gas model or an electric plane the problem is the same.

We easily identify with a gas model, figure 3, because we can visualize the explosion in the cylinder as supplying a unit of energy and moving the piston.

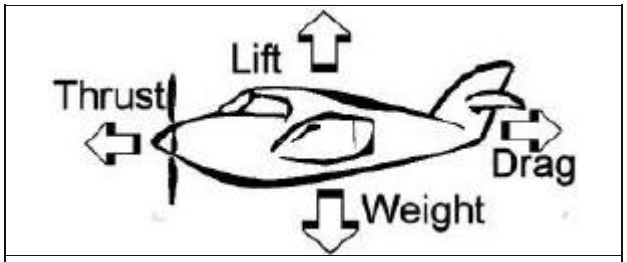


Fig. 2

More mysterious is the electric motor. Electrons moving out of a battery causing a model to zip through the air is not so obvious.

Electrical power

Let's see if we can follow the path of the energy from the battery, through the motor to the airplane.

Let's start with the forces holding the plane up and moving it forward. Forces are measured in pounds.

The wing generates lift (force) equal to the weight of the plane.

But, lift (force) comes at a price. The wing produces drag. So does the frontal area. Drag is a load that must be constantly overcome for the plane to fly.

What we are really interested in is the rate of doing work (or power) to overcome this load.

Power is the number of ft-lbs per second (or per minute, per hour etc.) If we work faster then we use more energy. We work harder.

Horsepower is convenient for mechanical work while Watts is appropriate for electrical work.

But, work is work no matter how you cut it.

First, lets look at the mechanical side. See Figure 4.

One horsepower is defined to be 550 ft-lbs per second. It is also 33,000 ft-lbs per minute. (60 x 550)

The propeller's power is in terms of force and motion (Horsepower).

The battery's power is in units of voltage & current (watts).

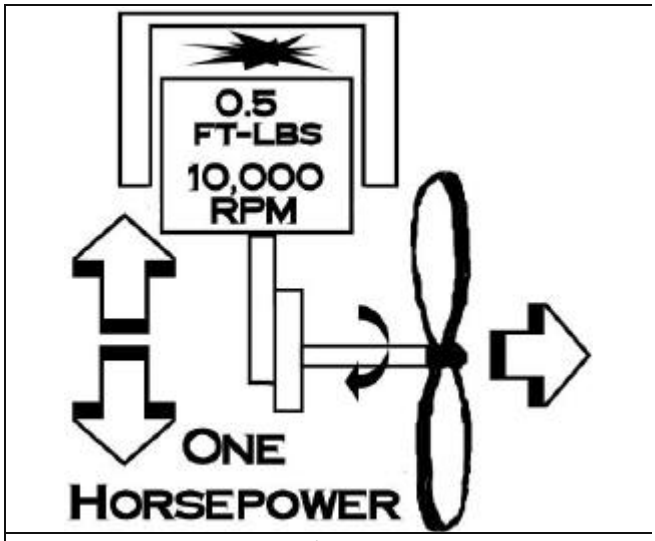


Fig. 3

There is a direct connection between horsepower and watts. They are just different ways to say the same thing.

One horsepower is equal to 746 Watts.

These are the very same watts that you use in your house for an electric light, a television set or an air conditioner. Your 60 watt light bulb could also be rated as .08 HP. (60/746).

Batteries use watts. Propellers use horsepower. See Fig. 5

So, how do the watts turn into the horsepower that flies the airplane.

Going in a circle

Motion in a circle is slightly different than motion in a straight line.

When you lift the book, you apply a force along the line of motion.

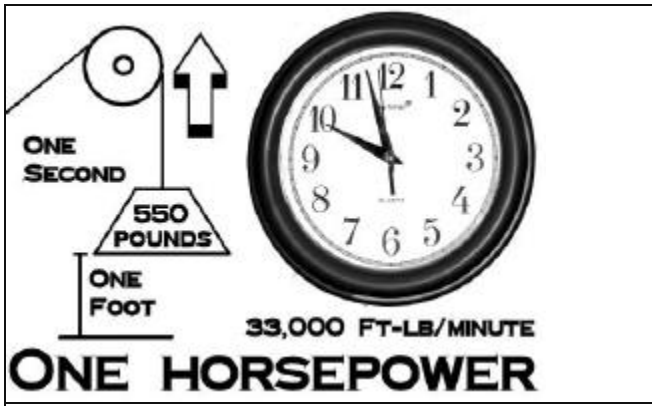


Fig.4

This is linear motion. Work equals the force times the distance.

But, a motor rotates. It turns like a wheel about an axis.

So, instead of pushing in a straight line, we apply the force to the edge of the wheel. The wheel then turns.

The force is always applied at right angles to the radius at a single point. See figure 6 on following page.

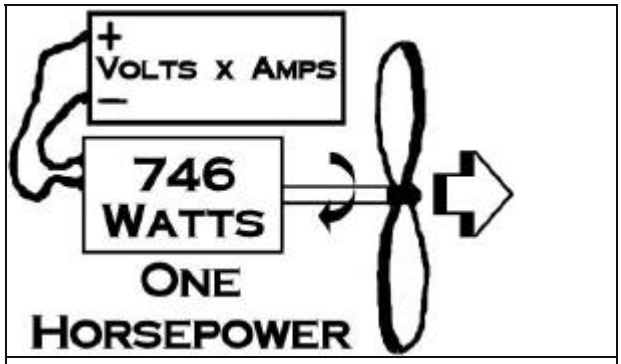


Fig.5

We call this kind of force, Torque. It means turning force.

Torque is equal to the force times the radius and is measured in foot-pounds, just as in linear motion.

The distance, however is 2 PI times the radius, or the Circumference.

PI is that famous number (3.1416) that relates the radius of a circle to the distance around it. 2xPIxR is once around the circle.

If we go around the circle 200 times in a minute, we would write this as 200 RPM.

Now that we know how force works in a circle we can calculate power.

This turns out to be "Torque times 2 PI times revolutions per unit of time".

We can count the revolutions per second, (RPS) or per minute (RPM).

What does all of this mean in the real world?

Recall that 746 watts is equal to one HP.

Any combination of volts and current will give it to us.

"Voltage times current" is equal to watts. However not every combination is practical.

Continued on P-6

Continued from P-5

The resistance of the motor (our load) limits our choices. Resistance is like friction.

The more resistance there is, the less current we can draw, or the more volts will be needed to push the current through the load.

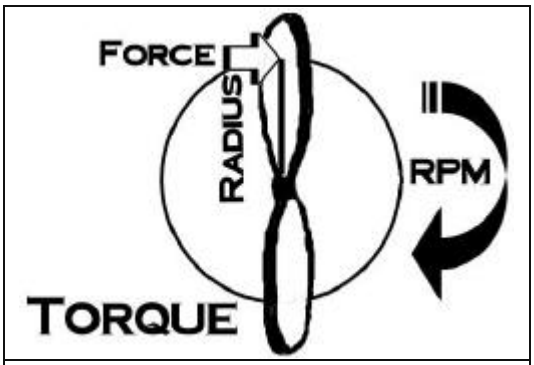


Fig.6

Using some practical values, we could get 31 Amps with 24 volts to give us 746 watts, (one HP) or we could use 48 volts at 15.5 amps.

Let's take a 7/5 inch propeller. The radius is 3.5 in. but the center of lift is located at about 3 in. Figure 6.

A 3 inch radius (0.26 ft) propeller whacks out about one pound of thrust when it is turning at 10,000 RPM.

Looking at this in circular terms, the torque is 0.26 ft-lbs. (.26 x 1 lb).

Multiply this by 2 PI times 10000 RPM and we have a power of 32,750 ft-lb/min. (33,000 ft-lb/min = 1 HP.)

So, we need to find a motor that will absorb one HP (or 746 Watts) at 10,000 RPM.

When Lift = Weight and Thrust = Drag, the airplane will fly.

A 5 lb plane must generate 5 lbs of lift to get off the ground. The wing does that, but at a price, called profile drag.

This drag is about 10% of lift, so the wing produces half a pound of drag.

Another half lb or so is contributed by the frontal area of the plane. That's a total drag of one pound.

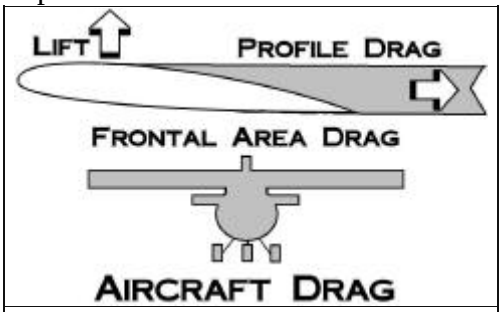


Fig. 7

So, to get our 5 lb wonder off the ground, we need 1 lb of thrust or about one HP.

For an electric model this amounts to 746 watts.

To make our calculations easy, we always use perfect motors. Motors are only 75% efficient so you really need 25% more, or about One Kilowatt.

Chinese Auction

"One man's junk is another man's treasure."

Dont miss this spectacular event! Following the Feb. 4th meeting.

Awards Program

This year our club put forth an initiative to reward long standing members for their contributions to the club over the years.

All of our members are important. Each has in some way made the club a better place.

One element was the length of service. Some of the members have been in the club for as long as 42 years.

Another was the fact that various offices were held over the years and not enough credit was given at the time.

There were also a lot of intangible factors, that would be difficult to elucidate, but never-the-less mark that extra effort.

This Recognition Program expresses appreciation to those individuals who have been active in the club for so many years.

Continued from P-2, Turkey

Sure enough, someone had bagged a planes so the young folk ran about the field playing catch and chasing Bob W's dog, (or vice versa).

turkey (at the local supermarket) and someone else brought peanut oil and a propane stove.

The wind was still cold and challenging.

But as activity picked up, so too did the warmth. Stu Brierley and Frank Shattuck quickly got the fire under control while Bob Rogers and Bob Waldraf struggled to subdue the Turkey.

No one appeared ready to risk their Anything to stay warm.

Soon the turkey was ready and everyone qued up to get their plates filled. There were excellent dishes to pass and the turkey was done to perfection.

After dinner the wind died down, and with it, the nasty wind chill. Planes took to the air and everyone had a great time.