THE RAMS HORN

RAINBOW AERO MODELERS SOCIETY

AMA Since 1936

The Official Newsletter of the Rainbow Aero Modelers Society
Metro Milwaukee Area Franklin, WI Founded Nov. 6, 1980
AMA–Academy of Model Aeronautics Club #1264, Operating for Public Benefit, Milwaukee County RC Flying Field, S.70 & W. Oakwood Rd.

VOLUME 29 – NUMBER 7 – July, 2008

Next Meeting Saturday, June 28, 2008

At the Field ! (70th & Oakwood Rd) Noon.

The President's Report *by* ***Tom Ryan***

Water! What water? I can't say enough about how 20 guys got together and worked to restore the field so that everyone could enjoy it again. One member who couldn't physically help bought food and refreshments and that was appreciated by every-one there. Some members used their own personal equipment to get us up and going, another great effort .

The task of cleaning up was cut down to size when everyone put their mind into getting things back on track, and did.

On Fathers Day, June 15th, we were back open for business and some took advantage of that fact by flying float planes and racing their boats in the water.

In spite of everything Mother Nature threw at us, we are back flying. The field is drying out and the water is receding... slow but steady.

There is still a lot left to do if we're going to have a successful ***July 12th Fly In.*** We'll discuss all that at our next club meeting that will be at the field the 28th of this month at noon, and everyone is invited to attend. Hopefully, we'll get a lot accomplished at that meeting and set the stage for our Fly In.

My thanks go out to everyone who helped in the clean up and I know many of you couldn't help because you had water problems of your own to deal with.

The slow start to the flying season has caused some speed bumps for all of us and we're now looking forward to getting flying again, hopefully the worse is over?

For those of you who'll be attending the next club meeting at the field, it may be a good idea to bring a lawn chair with you as the picnic tables may not be the most comfortable.

Hope to see you at the field meeting this Saturday, the 28th. Take Care, Tom Ryan

Pilot Profile This Issue: **Bob Ehlers**

Editor's Note: Complete flood photos, pages 10-11

RAINBOW
AERO MODELERS SOCIETY

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MEETINGS-7PM
First Wednesdays
*WaterStone Sav.Bk
6560 S. 27 Street
(*formerly Wauwatosa Sav.Bk.)

Membership Dues are $15 per year; except $7.50 /year for ages under 18, or disabled.

Dues paid after April 1. add $1.00
Dues paid after May 1, add $2.00
Membership ends June 1 if not paid

Terms of Office and Dues Year
Mar. 1 - Feb. 28

Milw. County RC Flying Site Operated by the RAMS Club is Oakwood Rd. at S. 70 th Street in Franklin

Pilot License to Fly at Milwaukee County Field $40
$15 under age 18

- Visitors at Meetings or the Field Always Welcome -

All Flight Instruction is Without a Fee

Contact:

FIXED WING – Reciprocating Engine
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*Retiring March, 2008–Will ***You*** take their place?

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Phil Schumacher, resource person, 414-425-2963

ALL TURBINE POWERED
Jeff Borowski, 414-483-4377 Darrell Hossalla, 414-651-0968
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HELICOPTER – Reciprocating Engine or Electric
Russ Schneider, SWARM instructor coordinator, 262-642-2790

Courtesy Model Airplane News, March, 1979

Happenings at the Meeting

RAMS Club, June 4, 2008

by Russell Knetzger, Librarian & Editor

Attendance at the June meeting was strong, with 36 present. The club has 65 members. Field licenses issued to date are 103, reported Jim Hatzenbeller. Newsletter by email was given a trial run a few days before the meeting, and seems to work. Current and back issues may be read "on-line" by visiting rcslot.com/rams courtesy of Keith Kittoe, owner of the on-line "rcslot" hobby shop near our field. Past Pilot Profiles may also be found there.

Field manager Bob Kabella, reported the Bolens tractor has new belts, the DR has new pulleys, and some willows across the creek were cut down by Roger Olsen. Bob's new style pit stand with forward vertical main wing restraints instead of rear empenage restraint is available for testing (see photo). He was authorized to build 3 more at $60 each. Picnic tables stenciled for food or spectator use will be positioned near the Frequency board, the club voted. Member Jack Spindler will care for the bulletin board to keep it neat and current.

Completing the west runway extension is under discussion with the City of Franklin, reported Russell Knetzger. New club member Greg Mitchell is being involved because he is a civil engineer with knowledge of current storm water and land grading regulations. [Subsequent to the meeting city storm water technician Bruce Taylor notified the club a city permit will not be needed, but we must still file plans and stay within certain guidelines set forth in the city letter. Tentatively, Greg Mitchell reports a DNR permit isn't needed in Milwaukee County.]

A light note was given to the meeting by SWARM member Chuck Bucci who protested the removal of trash baskets by running a small pile of junk up the flag pole. He was mortified when he realized it was up there for Memorial Day weekend. He appeared before the club to apologize. The humor came when he related how he once filled a bag of street trash he collected on his block, depositing it at the Franklin public works offices, so they would do a better job of street cleanup. He failed to notice the City Police offices are there also, and they called the County bomb squad to "defuse" the bag. All this was explained to Chuck by a police officer who returned the bag to him at his home.

The club settled more details about the Saturday July12, 2008 AMA Sanctioned Fly-In (Sunday rain-date), after hearing a food report by SWARM member Tom Young. A $2.00 car-park donation will be asked of non-club member attendees, and a $5.00 pilot entry fee; the 2PM raffle will be funded with $500 in prizes; an intermission display of all planes to allow a public photo-shoot will be provided, as well as a 12-12:30 Jet Air Show. A sanitary wash station will be rented, sharing the $100 cost with SWARM's Fly-In coming up Saturday, July 26th.

Above: Picture update from last issue showing new pits shelter with tarp roof in place, and new forward-restraint style pit table by Bob Kabella. Picture was taken Saturday June 7th after Friday 2 inch rain storms. Mild floodwaters visible in photo. Saturday night 5 more inches fell, and on Sunday another 2", totaling more than a "100-Year Flood" (6" in 24 hours). See incredible flood pictures this issue.

Raffle winners were Kent Struwe (glow plug igniter), Jack Bentzler (big calendar), Dale Champagne (18 volt cordless drill & flashlight set), Larry Johnson (CA glue), Bob Maciejewski (Sig Fuel-10%), and all the following prizes donated by Bill Stilley**:** Shawn Rehm (JR Radio), Marv Anderson (twice, battery packs), Andy Mudrick (aviation 2-book set), Bob Ehlers (photo book on Tucson, AZ aircraft junk yard –Davis-Monthan base).

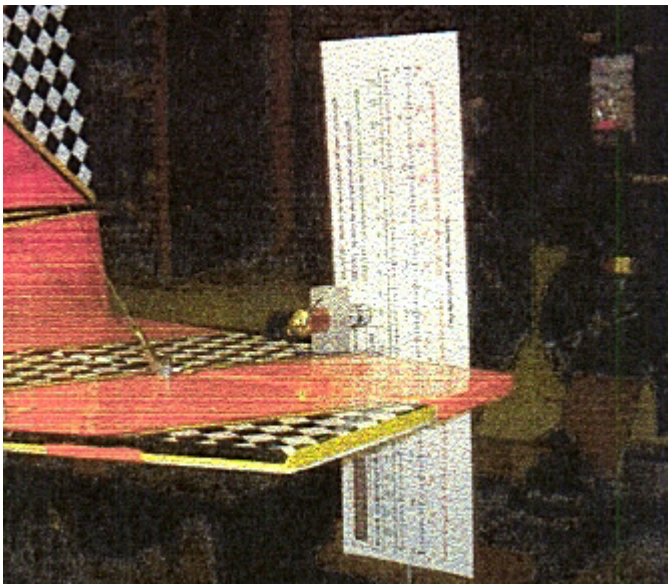
Models at the Meeting

June, 2008 RAMS Club

Above: Marty Scheidmeier displayed and explained his European kit-made electric powered "flying platform," with pendulum suspended camera.

The above platform flies up and down by virtue of the four propellers at each platform corner. The motors can tilt, adding horizontal motion. Three on-board gyroscopes and accelerometers stabilize all flight and hovering axis alignments. The pendulum camera mount gives it automatic stability by gravity. The camera can be swiveled to a straight down shot by the servo motor seen here, to the viewer's right. The kit costs 660 Euros, or $1,000 US dollars (that much higher due to the currently weak value of US currency. Steering by GPS coordinates will likely be offered on the next generation of kits. Power is 3-cell 2100 Lipo batteries.

Marty and buddy Mark Meyrose are known at the field for their telemetry setup where a hooded pilot, plus one hooded "passenger", can see out the front of a model via a TV video camera affixed to the under-belly of the fuselage, and the video image is transmitted back to the hood, so the wearer can see what the plane's video can see. It allows the illusion of riding in your own model airplane.



Above: Marv Anderson's home setup of the new laser-leveling device that allows super- accurate measurements of the flying surfaces of a model to detect surface warps or other misalignments.

Marv's device clips to any surface via a pair of strong magnets. One magnet is in the body of the oblong square holding the laser sending device, the other is separate, and the user places it (in this case under the stabilizer's elevator) to affix the laser to the surface. Once in place, with the laser shining out the cylinder tip, the calibrated measuring card seen above is placed where the laser can register on it. The card offers metric or English units, and results in surface measurements of under one-half degree accuracy. This unit was in the New Products section of the May Model Aviation magazine, and including shipping was $19 from Bob Maleski in Racine.

Pilot Profile: Bob Ehlers

by Russell Knetzger

Following in his father Bill Ehlers's footsteps, Bob, now 43, has achieved military pilot status, ending his 10 years of US Army Reserves service (Wis. 84th Division) with the rank of Captain. While father Bill, raised in Antigo, WI, flew the fabled F-86 Sabre Jets in the Korean Conflict era, and was in the first classes in 1948 of the new Air Force Academy in Colorado, Bob flew the utilitarian Army helicopter.

Like President George W. Bush, gaining pilot status serving only in the Reserves or the Guard is not easy. Bob had to serve ADT-Active Duty Training,in steamy Ft. Rucker, Alabama for a year to do so, in the process losing his first marriage, to which son Jay, 24, and daughter Kyla, 22, were born. Jay is now starting as a City of Milwaukee Police Officer, a post his late grandfather, Bill, served in for 42 years after his military service. Kyla's month old son, Hunter Jazsdzewski, raises Bob into the status of first-time grandfather.

US ARMY RESERVES 84TH DIVISION

RUUD LIGHTING

A 1983 Pulaski High School graduate, Bob grew up near Wanda (Grange) and Honey Creek Drive. With wife Barbara and daughters Sarah, 17 and Savannah, 6, Bob now lives on Quincy & E. Bolivar, just north of Gen. Mitchell Airport. These south side roots are helpful because Bob commutes to Ruud Lighting in Racine-Mt. Pleasant, on Hwy. 20. With 12 years there he is fulfilling his education, as did his previous 11 years at Great Lakes Instruments, in all aspects of quality --coordinating, auditing, and now engineering.

Bob holds an Assoc. degree from MATC in Industrial Electronics, a 4 year degree from Marian College in Operations Management,and a Marian masters degree in Organizational Leadership & Quality. At Great Lakes Instruments, makers of water purification monitors, Bob did work as an electronics technician, and both applications and quality engineering. In an applications test at the Howard Ave. water purification plant in 1993, Great Lakes was registering excess turbidity, but plant operators did not recognize the significance until the cryptosporidium was in the system, making people ill.

At Ruud, Bob is helping to transition into LEDs-light emitting diodes, which consume little energy, are bright, and commonly last 20 years.

Above: Bob Ehlers with his Hangar 9 F22 Raptor, .45 cu in Evolution engine, 48" span, 675 sq in, 7-1/2 lbs. Canopy lettering dedicated to his father, William Ehlers, F-86 pilot.

Below: Bob's RC aircraft fleet: (clockwise) trainer, Zero, Gee Bee, P-51 Mustang, and Raptor.

Bob's boyhood aeromodeling was mostly rocketry. It was not until 3 years ago that son Jay nudged Bob into R/C by gifting him the above trainer. Bob soloed fast by badgering Floyd Katz into several lessons per week

RAMS Horn, July, 2008, Russell Knetzger, Editor
Rainbow Aero Modelers Society, Franklin, Wisconsin

Electric Flight News - VII

By Dennis Vollrath, Editor, "The Flightline" -Mar. 2008 Racine R/C Club, Inc., Racine, Wisconsin – Reprinted in the RAMS HORN, Russell Knetzger, Editor, Franklin, WI

More on high powered electric models

We've talked about limiting factors on just how large and/or powerful the larger electrics can be. Problem is, unless you want to have only one flight a day, you must be able to recharge the model's motor batteries at the field. And, the source of power for this recharging will come from a lead acid battery. Don't even consider trying to recharge your high powered model battery from your automotive battery. These batteries are not designed for this purpose. And, you could easily wind up with a car that won't start after you've had a few flights during an afternoon flying session. You must use deep cycle batteries. About the largest reasonable cost battery is a 120 Ampere Hour 12 Volt DC marine battery, that will cost in the neighborhood of $60-$70.

Lets see, just how much can this battery do?? We11, its rated at 120 Ampere Hours, so theoretically it will put out 120 Amperes for one hour. Since watts output equals volts times amps, that is 12 volts times 120 Amperes, or 1440 watts. Since one horsepower is 746 watts, this lead acid battery will put out 1.93 horsepower for one hour.

Of course, you lose energy while recharging your model batteries. The typical Lipo charger and associated Lipo battery will run perhaps 70% combined efficiency. That reduces the 1.93 horse power for one hour to 1.35 horsepower for one hour. Now, you don't want to completely discharge the lead acid battery during every day at the flying field, so we will not get much more than one horsepower out of this deep cycle battery during a typical afternoon's flying,

OK, so now we have found that we can get about an hour total flying out of a 120 Amp Hour deep cycle battery when using an electric motor rated at about one horsepower. That places the required model in the four stroke .70 glow engine size, or about a 60 inch wing span, weighing in at around 7 1/2 pounds.

Based on this, I selected a Hanger 9 Showtime 50 model for the electric conversion. This model has a 57 inch wingspan, along with 722 square inches of wing. The motor selection can be overwhelming due to the very large selection of motors available. Prime candidates are the E-Flights and Hacker motors.

Hacker has a very good Internet site that will provide just about all the information needed for your basic motor size. The Hacker Internet site indicates that the A50 series motors compare to the .46 to .90 size glow engines. So the Hacker A50 series motor places us in the right location. (Note that Hacker also has A10, A20, A30, A40, and A60 motors.) Note that the Hackers have the A series, which is an out runner motor, and the B series which are the in runners. Out runners can directly drive a propeller, In runners require a gearbox.

The Hacker motors show an A50-10S, an A50-12S and an A50-16S motor, all with the same motor frame, with different motor windings. They also show the A50-XXL motors that are capable of even more power outputs.

I've selected the A50-16S (S=short frame) motor because of weight and battery requirements.

I wanted about one horsepower from this motor. Per the Hacker information, this motor is rated for 5 Lipo batteries, and has maximum continuous rating of 40 Amperes. Since the Lipos put out about 3.3 Volts under load, that's 5 cells times 3.3 volts per cell times 40 Amperes, for about 660 watts. That's just under one horsepower, and is looking good.

I've decided to use the A123 cells rather than the Lipos since they are far safer that the Lipos, plus they can be recharged in a much shorter time period. I'm planning to recharge mine in about 15-20 minutes verses over an hour for the Lipos.

Here Is where you absolutely must got help In the decision process. Just guessing on the proper motor-battery, setup-propeller, model-Electronic speed control, just won't work.

Fortunately, there are several computer based spreadsheets that really assist in this process. The one I use is Motocalc that can be downloaded from the Internet for a free 30 day trial. It costs about $40 for a full license.

Opposite is a screen dump from the Motocalc program that includes information about the model, motor, battery, propeller and so on.

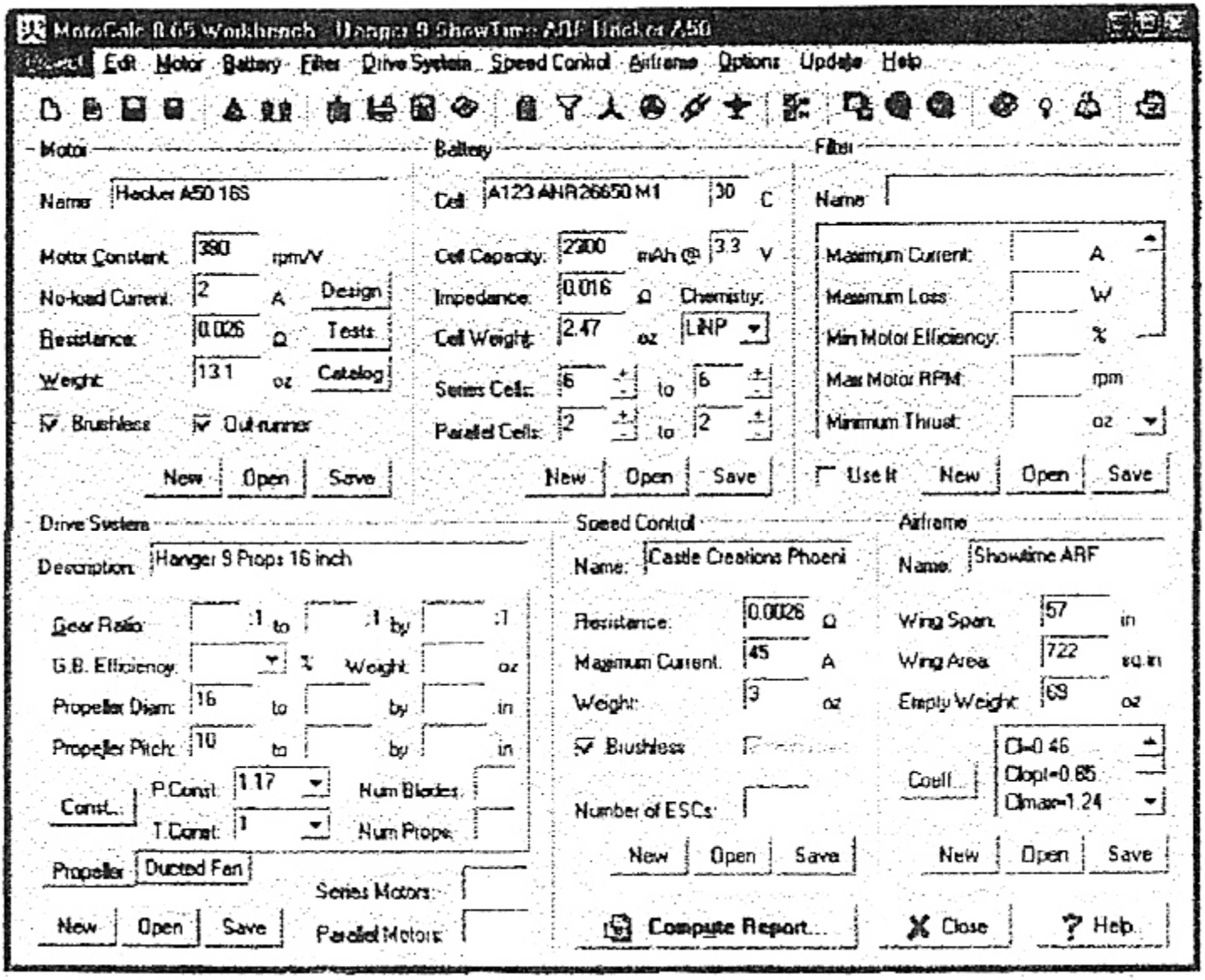
You do not have to know anything about the motor parameters, battery parameters or such. Just pick the motor mfg and type from a long list of motor suppliers, do the same for the rest of the items.

Note the "Complete Report' key input on the bottom. It generates full reports, analysis and much more on your set up.

We will cover this info next issue.

(See Next page for Motocalc Website Computer Screen)

Motocalc Website Computer Screen, see Dennis Vollrath: "Electric Flight News – VII"



Notes from Dennys Desk

by Dennis Vollrath, Editor, "The Flightline,"Feb.2008 Racine R/Club, Inc., Racine, Wisconsin – Reprinted in the RAMS HORN, Russell Knetzger, Editor, Franklin, WI

Dual Battery Input Spektrun Receivers

More than a few club members are flying expensive models involving quarter scale machines and so on. I just looked over what Spektrum RC has come up with for these models. They have released their new receiver, identified as model AR 9100. This is a Microwave receiver that operates 9 channels. The interesting part is, it has built into the receiver DUAL battery inputs, using number 16 battery wire, rather than the much smaller #22 or #24 wire commonly found on the general model receivers.

This receiver has three "slave receivers" included in the price tag. These slave receivers all plug into the main receiver for very robust signal reception. The design uses an on-off switch that, if it should fail, fails in the ON mode. It's apparently an electronic on-off switch. This receiver is directly compatible with all JR and Spektrum Microwave 2.4 Gigahertz transmitters. This thing is not cheap. The receiver alone is some $220, but for the very expensive models, it just might be worth it.

About Our Radio Systems-XI

by Dennis Vollrath, Editor, "The Flightline - Jan.2008" Racine R/C Club, Inc., Racine, Wisconsin – Reprinted in The RAMS HORN, Bill Stilley, Editor, Franklin, WI

How It works - Radio Receiver

Last issue, we talked about the radio receiver Radio Frequency RF section. This is a comparatively wide band circuit that can cover the entire model 72 Mhz region without retuning between channels 11 and 60. A radio frequency circuit just simply can not pick out channel 16 from 17, or channel 11 from 60 for that matter. It's a matter of ratios. Channel 11 is about 245,000 cycles per second (245 Khz) from channel 60. This is a ratio of 245,000 divided by 72,000,000 or about 0.35 percent of the 72 Mhz frequency we are trying to tune. As previously mentioned, we need to narrow this down to 5000 cycles per second, or 5000 divided by 72,000,000. That's about 0.006% of the 72 Mhz frequency. We need to improve the selective function of the radio by some 50 times. Well, we can not do it by the radio frequency circuit alone, it just won't work. So now what??

Well, very early m the radio design era, some 99 years ago, someone got the idea of mixing the radio frequency we are tying to receive with another frequency, and the superhetrodyne or "Superhet" was born. As you can see, this is not a recent design, its been around for near a century. So just what are we doing?

Many of us have watched someone taking a model airplane twin engine and adjusted both engines to be synchronized. Its hard to describe, but very obvious when both engines are at the same exact frequency. But, when the engines are not at the same exact frequency, you get a "beat frequency" that again is hard to describe, but very obvious when you hear it. So, what you have if one engine is running at 12,000 RPM and the other at 13,200 RPM is one engine that is running at 200 cycles per second, and the second is running at 220 cycles per second. (Just divide RPM by 60 to get revolutions per second). What you hear is the first engine at 200 cycles per second, the second at 220 cycles per second, and out of the blue, a third frequency of the difference of 220 minus 200 or 20 cycles per second. That 20 cycles per second is what you are trying to tune out by adjusting one engine faster or slower to match the other engine. Oh yeah, there is one more frequency generated, of 200 plus 220 cycles per second (or 420 cycles per second) buried in the noise that does exist in this entire mess.

On a similar note, many of us have watched someone tune-up a guitar by matching one string's frequency against another, and twisting string tension knobs to match up. Same thing exactly.

And, again, this stuff translates exactly to our electronic stuff. Lets take one of my old radios on channel 37, it is marked as transmitting at 72,530,000 cycles per second or 72,530,000 Hertz. We can simplify this to 72.53 Mhz, but we will use the full number for the, time being.

Now, if we electronically mix the 72,530,000 with a local 72,057,000 frequency, we get 455,000 Hertz out. As it turns out, if the "Mixing frequency" is a very pure sine wave, the information or modulation present on the original 72 Mhz frequency will also be present and will be identical on the 0.455 Mhz frequency.

With this much lower 0.455 Mhz frequency, we can design a very narrow band circuit that can pick out the required 5000 cycle bandwidth we need for our narrow band radios. (Some readers may recognize this 0.455 Mkz as 455 Kilohertz or the Intermediate Frequency amplifier also known as the IF amplifier. This is the basis of the single conversion receiver that works well in many receiver designs such as the AM section of our common AM-FM radios we have in our house. Next issue we will discuss is some of the shortcomings of the single conversion radios as used in our RC systems. (And why most 72 Mhz RC systems use "Double Conversion" on the receiver.

Radio receiver installation

I've worked for many years in the Service department of a company that manufactures very large circuit breakers used in public utility power equipment These breakers have ratings of 38,000 volts and 600 Amperes full load, and can clear some 16,000 amperes in a short circuit. These breakers are commanded by electronic controls, the part I worked on for many years. We progressed from controls using vacuum tubes (yeah I repaired them early on) to discrete transistors, to microprocessors, to the very high performance controls that we use today.

Over the 44 years I worked at this company, we had repeated failures of the same kind many times on all versions of the circuit breaker controls. We would conduct full factory testing, pack the controls and breakers into cardboard boxes, and place the circuit breaker boxes into wood crates.

Then when the customer received the equipment, they would find electronic parts laying on the bottom of the cartons. They would have absolutely no damage to the shipping cartons or shipping crates. We've actually had all the 1/2 inch bolts come loose on 3 inch galvanized steel angle iron, dropping the circuit breaker from these mounting steel structures. All of these bolts had lock washers, and were installed with an impact wrench.

Fortunately, it did not take long to figure out what was happening. It seems the shipping damage resulted when the equipment was shipped on a nearly empty tractor trailer with a severely out of balance tire. The resulting pounding after a 2000 mile trip resulted in some controls breaking off a dozen or more electronic pads from vibration induced fatigue of the various components. We've gone to securing all "standing up electronic parts with a special electronic compatible RTV compound on our equipment for the past 20 years because of this vibration phenomenon.

So how does this affect our models??

We've talked above about mixing a new frequency with the existing transmitted frequency in the receiver. As you may suspect, this new frequency must be extremely stable or the darn thing won't work. As it turns out, this new frequency is generated by a crystal-controlled circuit much like that used in our transmitters. This frequency is controlled by the crystal we plug into our receivers. And, as discussed earlier, this crystal is actually vibrating millions of times per second as it generates our required frequency. Now, we have all taken a piece of metal like those wind chimes some of us hate, and held them while whacking them with another item. If the chime is held at the exact center very loosely, it will chime very nicely. Take the same chime, hold the chime with both hands, separated by several inches, and whack it again. It will not chime very long, if at all.

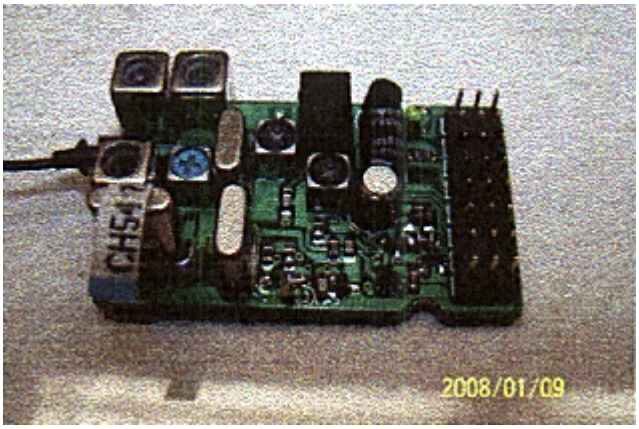
Same thing applies to the quartz crystal inside our two pin crystals we insert into our receivers. This very small quartz crystal is mounted very lightly inside the crystal case. Last summer, I really cringed when I saw a receiver installed into a gas powered model airplane with velcro! If that tiny quartz crystal inside the crystal case gets vibrated off its mounting clips, you crash. Period. A lot of other parts inside these receivers are also subject to vibration, any one of which if it suffers fatigue damage, you crash!

Across top right is a bottom view of a Hitech RCD 3200 dual conversion receiver. Note the flat mounted surface components that are soldered to the circuit board. These flat mounted parts are extremely resistant to vibration, and work well with the environment found in our models.

Following the bottom view is a top view of the same receiver. Note some of these parts are also "standing up". Note the three crystals on the receiver - one is plugged in.

The second and third are soldered permanently to the circuit board This receiver also has a number of radio frequency transformers that are square in size, and have little tuning "X" marked powdered iron type gadgets in the top. (If you want to really screw up a receiver bad, try messing with these adjustments!)

Also note the round capacitor mounted just to the right hand of the rectangular black item. Even the Spektrum radios just had an alert that some of these type capacitors broke loose inside one of their 2.4 Ghz receivers, causing failure. Information on this is present on the Spektrum web page. If you do it yourself, DO NOT USE SILICON RUBBER ! The smell that silicon rubber gives off is acetic acid, which will ruin your receiver, after a few months of flying. (Yes, then you crash and won't know why.)



Above photos by Dennis Vollrath, article author and Editor, “The Flightline”, Racine Radio Control Club, Inc., Racine, Wisconsin, January, 2008 edition.

Flood Photos, June 9, 2008

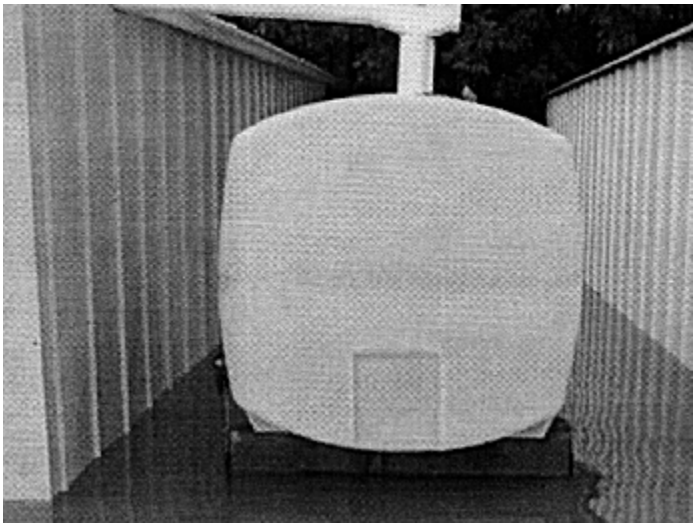
Taken by Dale Champagne and posted on the club web-site at www.rcslot.com/rams, Keith Kittoe, webmaster

Many more photos are on the website than shown here. The three days Friday, Sat. & Sun. totaled 10 inches of rain. Six in./24 hrs. = the "100 Year Flood"

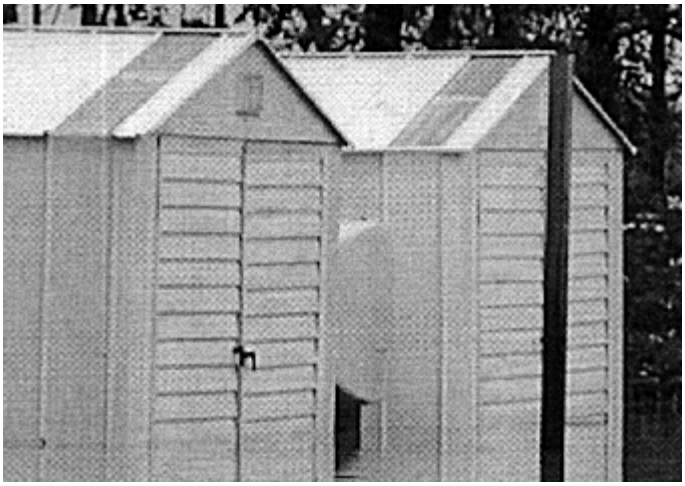
View NE, flood touches frequency board bottom

View N, flood along N flight line and new shelter

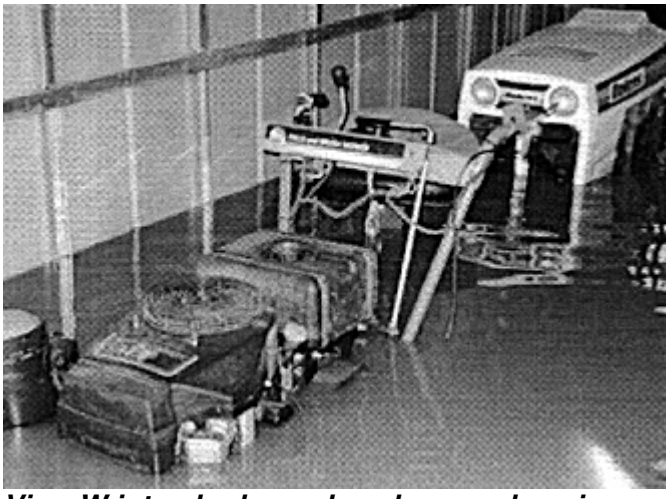
View N, flood on roller, and rake shed doorlocks



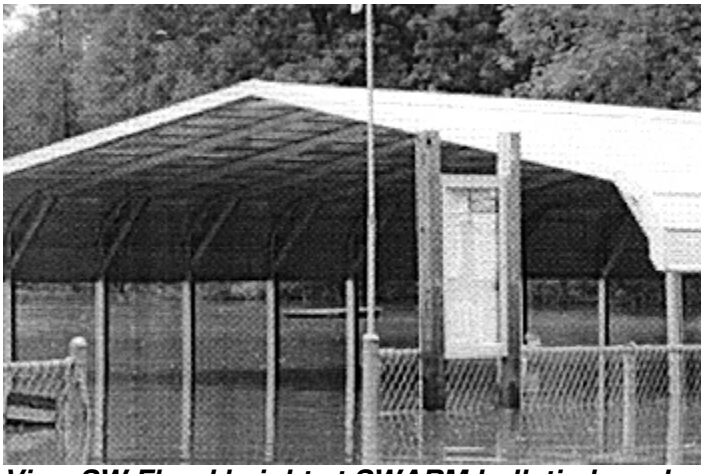
View W, flood height measured on rain cistern



View NW, flood height on equipment sheds



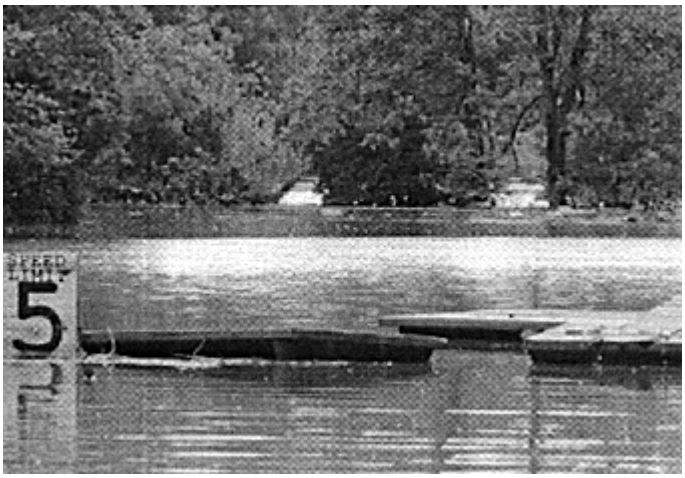
View W into shed; nearly submerged engines



View SW,Flood height at SWARM bulletin board

View SE, portable toilet floats near heli shelter

View W. picnic tables float together S of parking



View E, picnic tables float near speed limit sign

View NE, firewood floats at Oakwood Rd. sign

View E, firewood floats south across Oakwood

The "Great Flood" from rains June 6-8, 2008: Field work party held Saturday June 14, 2008
RAMS member <u>Mike Lutzenberger</u> doing his part by towing with his motorized wheel chair one of our floated-away creek bridges back to our field entrance, retrieved on Oakwood (center of photo, looking east)
Photo by Jeff Borowski, Similar photos by Darrell Hossalla

Upcoming Events

***<u>Saturday</u>*, June 28, 2008 RAMS Club Meeting-Noon**

AT THE FIELD !

(No July 2nd Meeting at the Bank – See July 1st below)

Saturday June 28 - Skyranch Flyers, West Bend, WI (Take USH 41 to CTH D, east 3 miles)

Tuesday, July 1, 2008 MARKS INVITATIONAL – RAMS, 7PM
Giant Scale Slides, by RAMS' Bill Geipel, Computer projection by RAMS' Tom Nettesheim (82 & Forest Hill)

Wednesday 7PM, July 9, Mitchell Intl Airport, Concourse Museum-Free Park, Wis.NG talk on Helicopters

*** *Saturday July 12, 2008, RAMS/Milw. County RC Field Fly-In * ***

Sunday, July 20, 2008 Racine RC Club Fly-In, (Take STH 20 E. to old School House, N. on Drive)

Saturday July 26, 2008, Lakeland RC Club (Oconomowoc Airport, STH 16, N on P, W on K)

Saturday, July 26, 2008 SWARM Heli Fly-In, (Milw. Co. Field, 70th & Oakwood Rd.-Franklin)

Monday, July 28-Aug. 3, 2008, EAA KidVenture Volunteering (call Dave Sackerson at EAA)