



# THE RAMS HORN

Jan 2008

Volume 15 Issue 1

The Official Newsletter of the Rainbow Aero Modeler's Society  
Metro Milwaukee Area Franklin, WI Founded Nov. 6, 1980

## ***Next Meeting: Wednesday, Jan. 2, 2008***

### ***Wauwatosa Savings Bank***

***6560 S. 27<sup>th</sup> Street, Oak Creek, 7:00-9:30PM***

***(East side of 27<sup>th</sup> St.-1/4 mile south of College Av.)***

by Russell Knetzger, 2007 President

### **January 2<sup>nd</sup> Program: JETS NIGHT**

The field we operate for Milwaukee County now has four jet pilots regularly using the field. They include jet pioneer Roger Olsen, Tom Ryan, Darrell "Hoss" Hossalla, and as of last month, Jeff Borowski. (See his profile this issue.) Roger is currently without an assembled model, but the other three plan to bring in models and "give you the low-down" on them. They are not cheap, but they are real show stoppers. As a courtesy we try to give them solo access to the air-space when they fly. But who would want to do anything else and not watch their flight? Whoosh!

### **Dec. 5th Program:AMA Museum-NATS Combat**

Andy Runte, DVM narrated his visit this past summer to the AMA's 800 acre Aero Modeling Center in Muncie, Indiana, about a 6.5 hour drive from Milwaukee, via I-65 around Indianapolis. His video shots of the museum were turned into slide show "stills" by Tom Nettesheim, and projected onto our room pull-down screen. Videos made into slides can be a bit grainy in texture, but in this case it was not noticeable. Andy also showed some motion footage of the flight line of the Combat NATS event, in which he was a contestant.

### **Nominations This Meeting**

Terms of office for RAMS Club officers are one year. Each January nominations are made, published in the February newsletter, and at the February meeting voting takes place. Newly elected officers take over March 1<sup>st</sup>. That odd time of year for changing of the guard was inherited from the Milwaukee R/C Association. They built our field and ran it for the first ten years. Their fiscal year is March 1<sup>st</sup>-February 28<sup>th</sup> because their only fund raiser, the Swap Meet/Auction, is in January. When they turned the field over to the RAMS (at no cost, including equipment) the RAMS kept the same calendar to create no disruption in licensing.

### **Donated Generator & Air Compressor Likely**

RAMS Vice President Bob Kabella and Editor Bill Stilley, are working together to gift to the RAMS a portable electric generator, and an air compressor. The compressor will be used for cleaning out the radiator of our Allis-Chalmers diesel tractor. The generator can also be used for charging the batteries of our lawn equipment.

### **Don't Forget: Auction/Swap Meet thus Sunday**

This is the largest in Wisconsin, even larger than Chicago, so this is your chance to reduce your inventory. "*He who dies with the most does not win.*" Directions for getting there are on the back cover, and a sheet is likely inside this issue.

### **Pilot Profile Inside: Jeff Borowski**



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**Dues (submit to Sect.)**  
**Mar. 1 - Feb. 28**  
**\$15 membership**  
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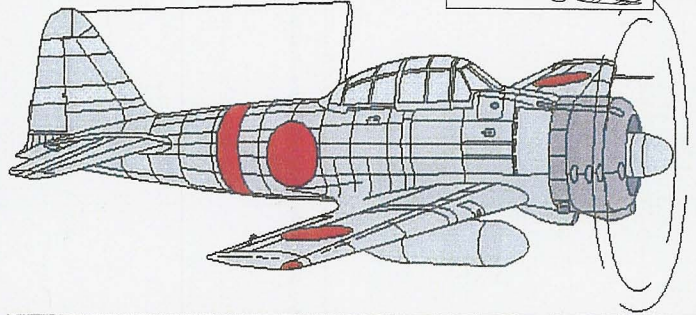
MEETINGS

First Wednesday of every month @ 7:00 PM  
Wauwatosa Savings Bank  
6520 So. 27th

FLYING SITE

Milwaukee Co. RC Model Flying Field  
approximately 70th St on Oakwood Rd.

**Visitors always Welcome!**



**Editorial Disclaimer and Policy**

Items printed in this newsletter are the opinions of the authors and may not reflect the views of the editor, officers or the club as a whole, but are the responsibility of the authors. This newsletter is published and mailed out at the beginning of each month. Items submitted for publication must be received by the editor no later than the 20th of the month prior to the publication month. Permission to reprint is hereby granted provided that credit is given to the author and this newsletter. Items submitted for publication may be edited to fit available space, however, the main topic of the material submitted will remain intact to the extent possible within editorial constraints. Material should be sent to the newsletter editor at the published address or to the editors E-mail address

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**Helicopter**

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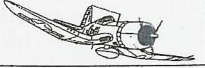
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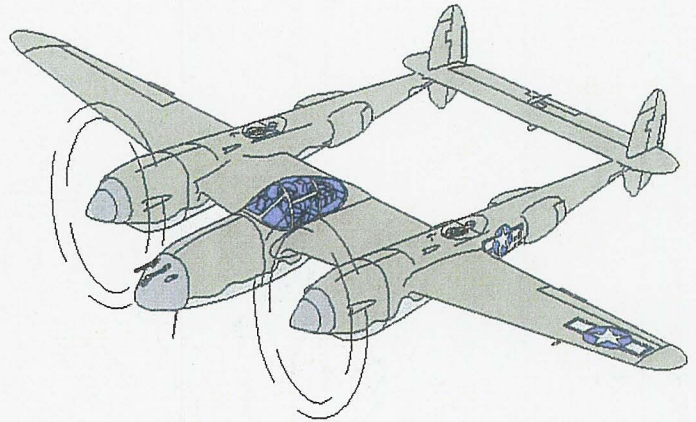
## Meeting Minutes of Dec 5th

Submitted by **Bill Stilley**

Our President **Russell Knetzger** called the meeting to order at 7 pm. He mentioned all the magazines that are available on the rear table. **Bill Flannery** gave the club treasury report and **Jim Hatzenbeller** gave the field fund report. **Mel Stein** was absent, so there was no field condition report, but the consensus is that it is covered in snow and therefore still useable with skis or floats. **Mike Jankowski** said he will hold another CPR class if there are 8 people minimum that want to take it.

**Russell** mentioned that the Waukesha R/C Auction in January needs volunteers. They will need people for the 7-9am, 9-11am and 11am-1pm shifts. Our club gets \$10 for each of us that volunteers. The phone number is shown on the Auction circular. He said the auction is an opportunity to sell our surplus stuff and use the money to buy more stuff. **Bob Kabella** showed us all the raffle prizes for this months meeting. **Russell** said he is inviting the 4 members of the club who fly jets to give a presentation at next months meeting.

**Andy Runte** had a video presentation on R/C combat flying. Some people bring trailers full of planes and stuff. There are five classes of combat flying, Scale (.25 engines), SSC (.15 engines), Limited B (.25 engines) and Open (.25 engines with tuned pipes). He also showed slides of his visit to AMA HQ in Muncie, Indiana. He had a slide show tour of the HQ



building and it's history along with a lot of displayed models. One of the displays was of an old time hobby shop. There was a display of the Good brothers R/C equipment from 1937 and a huge display of engines going back to 1934. Given the chance, it is a visit we should all make.

Show and tell: **Dave Simonson** brought a Fokker DVII ARF electric. This is his first bi-plane and cost \$79. The company also makes a British SE-5 and a Fokker Tri-plane. **Andy Runte** brought his red combat plane, powered by an OS 40 LA engine and has the battery and receiver in the wing. **Steve Ward** brought a slope glider of a Mustang, he is thinking of using electric power for it. **Earl Evans** brought his combat plane.

Raffle prizes: **Al DeRidder** won a set of floats for a 40 size plane, **Bob Kabella** won a stripe cutting tool, **Craig Manka** won a Coverite covering sock and a heat gun, **Bob Manka** won a set of adhesives, **Earl Evans** won a deer processing video, **Bob Maciejewski** won a Nemesis foam airplane and the Spruce Goose plans.

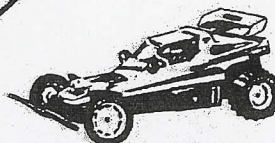
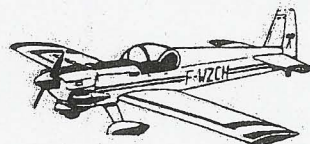


30th ANNUAL

# SUNDAY JANUARY 6th, 2008

MILWAUKEE, WISCONSIN

# AUCTION & SWAP SHOP



Sponsored by  
**MILWAUKEE R/C ASSOCIATION**



Chapter #7

ADMISSION: \$5.00 ADULTS  
(UNDER 16 FREE)

**SWAP SHOP: 9:00-3:00**

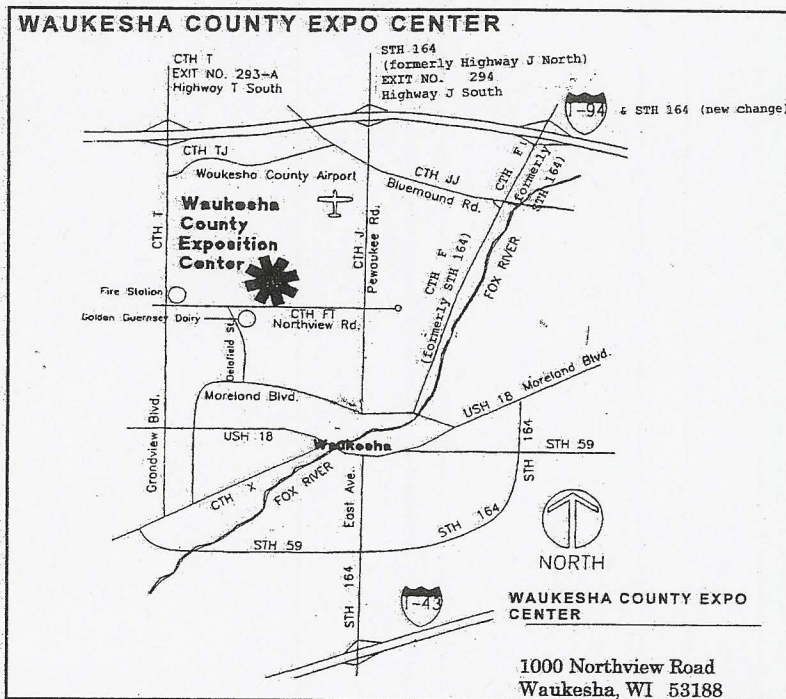
No selling or general admission before 9:00

## AUCTION

Every 30 minutes in 15 minute segments, from 12 noon until all items are auctioned.

## TABLE FEES

All tables are \$20.00 ea. plus \$5.00 admission per person. 2 admissions for the first table and 1 admission for each additional table. No exceptions. Please call Jim or Shirley Krebs to reserve your tables - 262-767-1197.

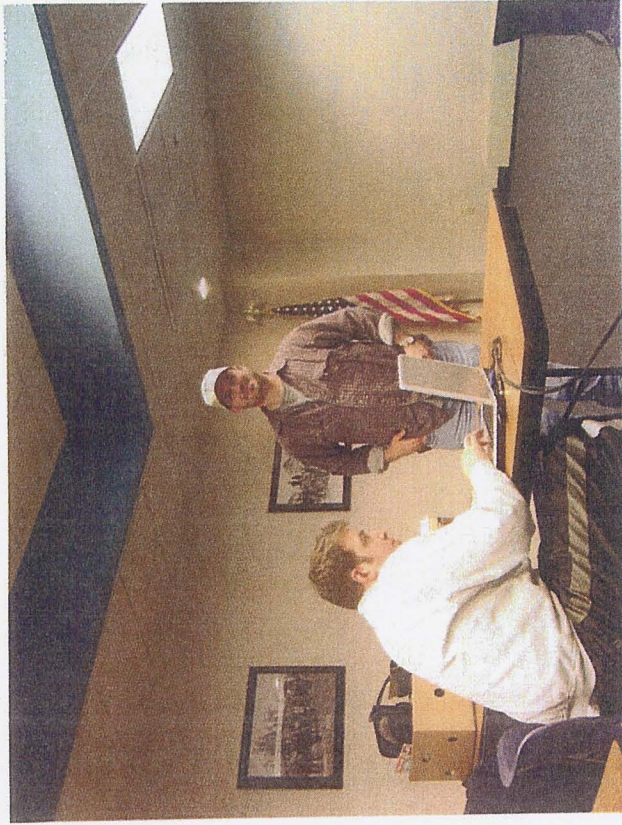


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(South of Waukesha County Airport)  
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SOUTH ON J, ONE MILE TO NORTHVIEW

FOOD - BEVERAGES - AMPLE FREE PARKING  
**RAFFLE at 1:00 p.m.**  
(or immediately after auction)

## MEMBER CLUBS:

ABC/RC; Astro Wings of Wis.; Dairyland Aero Miniature Modelers; Lakeland R/C; Milwaukee Area Radio Kontrol Society (MARKS) Club; Milwaukee Flying Aces; Flying Electrons, Inc.; Pebble Creek Flyers, Inc.; Racine RC Club, Inc.; Rainbow AeroModelers Society (RAMS Club); Sea Turkeys Assoc. Racing Team (START Club); SE Wis. Area Rotary Modelers; Sky Ranch Flyers;  
AFFILIATE CLUBS: Bong Eagles; Circlemasters Flying Club, IPMS: Billy Mitchell Chapter; IPMS: Richard I. Bong Chapter.



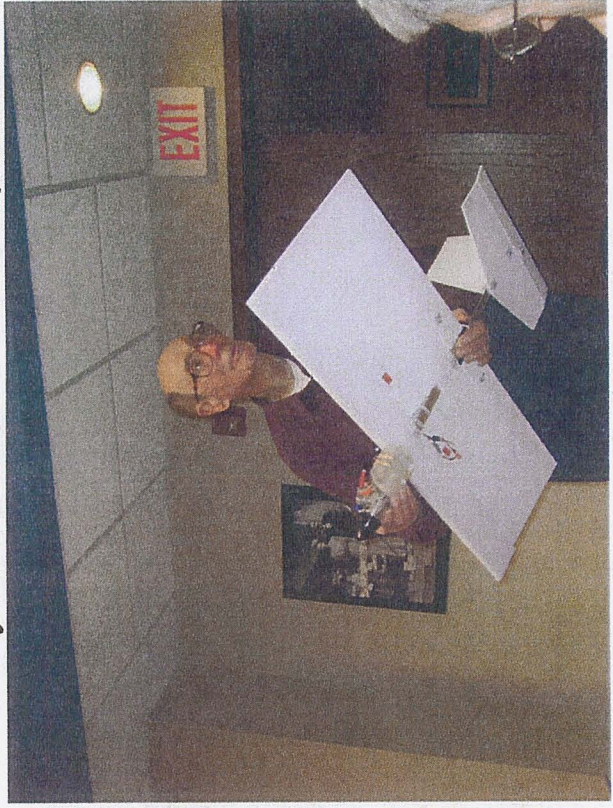
Tom Netteshiem and Andy Runte



Andy Runte and combat plane



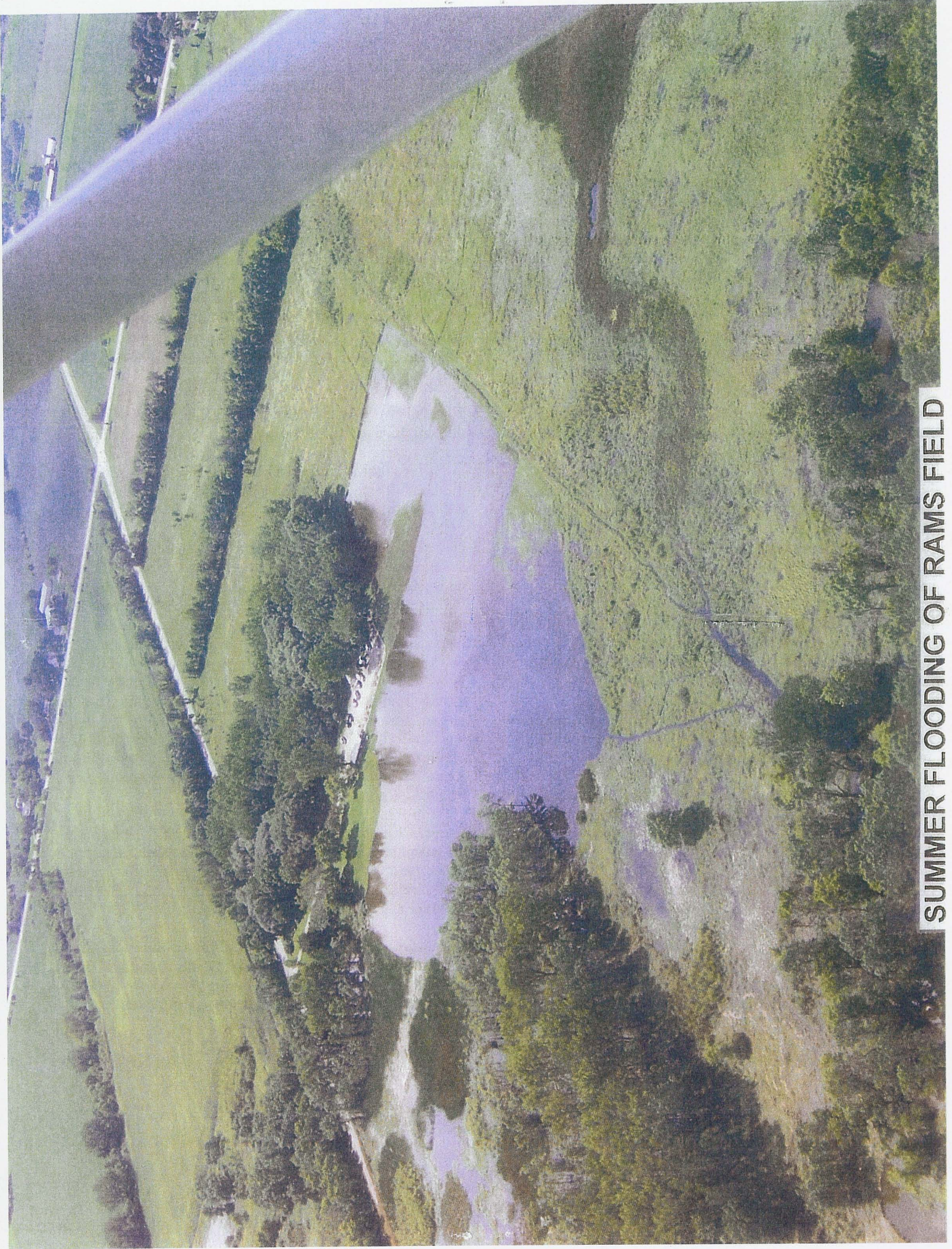
Dave Simonson and Fokker D VII



Earl Evans and combat plane



SATELLITE PHOTO OF RAMS FIELD



SUMMER FLOODING OF RAMS FIELD

# How Our Radio Systems Work, V

by Dennis Vollrath, Editor, "The Flightline, August, 2007"  
Racine R/C Club, Inc., Racine, Wisconsin – Reprinted  
in the RAMS Horn, Bill Stilley, Editor, Franklin, WI

## More on Modulating the Transmitter Signal

Last month, we discussed modulation of the radio signal that is transmitted from our RC transmitters. Without the ability to modulate the transmitted Radio Frequency Signal our RC radios would not work. In fact, without modulation, we wouldn't have radio, TV, or cell phones. It would be a very different modern world.

By the way, last month we went back to the swing set, describing sending the swing set back and forth while pulling it down the highway. The leaky bucket full of ink will trace out a sine wave on the highway. Now, let's swing the swing set a little faster. OK, a lot faster, like 92,000,000 times a second. And, pull the swing set down the highway at 186,280 MILES per second. This would result in a wave shape very much like what some of us have heard as a wavelength of a radio signal. Since the speed of 186,280 miles per second is constant, varying swinging the swing set back and forth at different speeds will result in different wavelengths of ink spread on the highway. Some may recognize 186,280 miles per second as the speed of light. And, 91,000,000 cycles per second is the transmitted frequency of our RC radios.

For what it's worth, if you take a TV set, put on a set of rabbit ears, tune it to channel 4 or 5, and turn on an AM RC transmitter near by, you should be able to hear, and possibly see the signal on the TV.

We've covered AM (Amplitude Modulation,) last issue, where we literally turn on and off the transmitted signal at a fairly high rate, usually in the audio frequency range.

**FM modulation** is a whole different animal. Note we've talked AM and FM. What is PCM and others? Turns out they are just a variety of FM modulation. We'll talk about PCM in another issue.

FM modulation is an electrical frequency variation of the actual transmitted frequency at a regular rate. In fact, FM stands for Frequency Modulation. Fancy words. Just what the heck is it?

As discussed, **AM modulation** is varying the magnitude of the swing set, back and forth over the highway center line. Same as varying the volume control of your TV, and in fact, varying the "Volume" of the radio transmitted signal is done electronically, creating an **Amplitude Modulated** radio signal.

**FM is FREQUENCY** variation of the transmitted signal. With FM, the amplitude of the radio signal does not vary with modulation, only the frequency. Back to the swing set. Lets

swing this swing set back and forth exactly 1.0 cycle per second. Lets see, that's 60 cycles per minute, 3600 cycles per hour, and 86,400 cycles per day. You may have heard that we have a 5000 (5 Khz) bandwidth limitation on our radios, defined as narrow band 15-20 years ago. OK, if we apply the ratio of 5,000/72,000,000 we come up with 0.0000694 percent. So we are varying something at about 0.00694 percent. Turns out, what we are varying is the **FREQUENCY** of the transmitted signal by some 0.00694 percent. Relating back to the swing set, if we consider 86,400 cycles per day as the carrier frequency, and change the cycles per day to 86,406 cycles per day, this is how much we are modulating the signal. No, it is not much. Note we can either **INCREASE** the frequency, or we can **DECREASE** the frequency Radio wise, it's same thing. But for our RC radio systems, it is one reason why some transmitters and receiver brands should not be interchanged.

Something very similar in nature is a guitar player, who strums the strings, then varies the pitch of the note by sliding the strings sideways on the guitar frets. Some of the guitars have a lever that is used to vary the pitch by just placing pressure on the lever. Same principle, but far higher in frequency in our RC transmitters.

Now, reflecting back to our actual transmitted frequency, we are transmitting at 92,000,000 cycles per second, plus 5000 (or minus 5000 depending on brand of radios). This accounts for the so-called narrow band radios. The older radios varied the signal by four or five times this amount, the so-called wide band radios that are no longer allowed at most flying fields.

Now, keep in mind, we are not transmitting music or TV signals from our RC transmitters. In fact, transmitting music on an AM transmitter, you can literally see the music modulation on the radio frequency with a high frequency oscilloscope. Not so with FM. It takes special electronics to figure out what is going on. This decoding is accomplished inside the receiver.

So just what are we transmitting, if not music? Turns out we are transmitting one's and zero's. Yep, the **modulated** signal is either "yes" or no", just like my old Craftair radio with the push button on its front. It's the same thing, AM or FM, and PCM for that matter.

Next issue, we will discuss some of the ramifications of the narrow band radios, and how it limits just how much information can be transmitted during a measured period of time. And, just what is PCM and other coded signals?



## Pilot Profile: Jeff Borowski

by Russell Knetzger

Jeff Borowski remains the most *versatile* model aviation pilot at the Milwaukee County Field on Oakwood Rd. in Franklin, Wis., and that reflects the education he eagerly sought, and the kind of employment he always manages to hold.

As a boy in Cudahy, where he has lived for all but two of his fifty years of life, Jeff at age 8 started with an 18 cents Sleak Streak rubber powered kit from Cudahy News & Hobby, in downtown Cudahy. At that time Jay Gordon's father ran the store, since moved by Jay to become Greenfield News & Hobby on S. 68<sup>th</sup> & Layton. Jay was a Cudahy High School graduate with Jeff, Class of 1976. By graduation, Jeff had mastered 108 mph & 140 mph control line combat, flying .36 cu.in. engines with 50% nitromethane in the fuel (age 11) to R/C sailplanes (age 16-17), including slope soaring off Lake Michigan breezes at Warnimount Park, to competition "thermal soaring" under AMA & FAI International rules.

Those rules require the pilot to stay aloft for near 10 minutes strictly by riding any rising warmer air on or near the field, and then sliding in to a landing with the plane's nose as close as possible to a spot marked on the grass. For every second under or over 10 minutes, points are deducted, and for every inch out of the circle another point is taken away. So landing precision in time and space is crucial.

Jeff feels if he could have afforded to attend the FAI Team Selection Tournament in 1976 at Pensacola, Florida, he could have parlayed his 2<sup>nd</sup> place standing in the Wisconsin Championships to a place on the AMA-USA Team for Belgium, 1977. Married at age 19, he even hoped to combine Belgium with his honeymoon destination. He settled instead for becoming the instant father of three girls from his wife's first marriage – Tina, Stacy, and Tammy.

Jeff pioneered the County Field opening in 1979, still flying sailplanes. But he also flew an early version of what is now called "3D" models. In 1980 Jeff tried .40 sized fixed pitch (hence unflyable) helicopters. He returned to helicopters in the mid-1990s, as the .30 sized "Raptor" with variable pitch made true R/C helicopter flying possible at reasonable cost. Since 2005 Jeff has been a field rep for **Gohbee Aviation** ([www.gohbee.com](http://www.gohbee.com)) entry level helicopters, test flying and making design suggestions.

In Nov., 2007 Jeff became the 4th certified turbine pilot at the Co. field, by masterfully piloting his all balsa jet, "Reaction 54," witnessed by the other 3 jet pilots, Darrell Hossalla, Roger Olsen, & Tom Ryan.



**Jeff Borowski and his all-balsa wood, Reaction 54 jet model, 78 in. wing span, 1,453 sq.in. wing area, 18 lbs. weight and 18 lbs. of engine thrust. The wing has a 24 inch chord and is 4 inches thick, which make for great controllability at all speeds, including hovering on mild headwinds, rare for jets.**

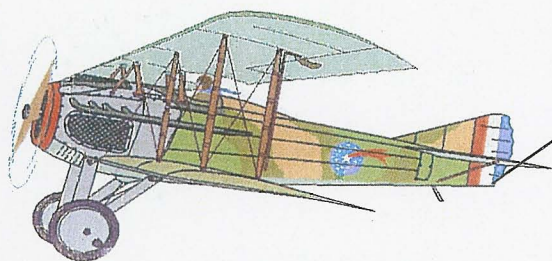
Courage to tackle such a wide variety of model aircraft stems from Jeff's broad high school education. He took every shop course possible, from auto, metal and woodworking, to electricity, electronics and welding. Like his father, Donald, he has been fortunate to land jobs that required original thinking, and broad knowledge of materials and methods. His dad worked his entire career as a metals technologist at Ladish, Inc., a mainstay employer of Cudahy, where the products usually are for military or transportation use, with extreme reliability of performance of the parts made. Anything sub-safe "will" cause loss of life, or the vessel. An example is the "scuttle valve" on a ship. When you need it you want it to work, but an untimely leak costs the ship.

Jeff's version of such work included an 18 year stay at Dittmore-Freimuth, where, like Ladish, military clearances were a necessity, and "zero-build failures" a rule. The US Gov't. gave a "Highest Quality" rating to the firm, and Jeff enjoyed working there very much, rising from drafting to senior design engineer. He stayed until the company, under new owners, closed. Jeff found similar work at others, and now is with Racine Industries. There his wide knowledge of bidding, castings, CNC machine tools, plastics molding, and welding, serve him well.

**RAMS Horn**, January, 2008, Bill Stilley, Editor  
Rainbow Aero Modelers Society, Franklin, Wisconsin

# THE RAMS HORN

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## Inside This Issue

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## Upcoming Events

Wednesday, January 2, 2008 RAMS Club Meeting 7PM

Wauwatosa Savings Bank, 6560 S. 27<sup>th</sup> Street

### MEETING PROGRAM

***JETS NIGHT- Models with Turbine Engines***

JANUARY EVENTS

**30<sup>TH</sup> ANNUAL AUCTION & SWAP SHOP**

**SUNDAY, JANUARY 6, 2008 9AM-3PM**

MILWAUKEE R/C ASSOCIATION

Waukesha County Expo Center, Waukesha Co. Airport, Wisconsin

Opens 9:00AM (Sellers start unloading at 7:00AM)

Admission \$5.00, Sellers Table Fees – \$20 each

Vendors & Volunteers encouraged to register in advance: Jim or Shirley Krebs, 262-767-1197

(Take I-94 west of Milwaukee to CTH J exit, south on "J" along Airport to Northview Rd., turn right)

### LOOKING AHEAD TO MARCH

APPLETON, WI SWAP MEET, Sunday March 2, 2008 "The Wave" Bar & Ballroom