

Servo Chatter

September 2007, Issue #125

Official Newsletter of the SCCMAS "Tomcats"

AMA Club Charter #110

www.sccmas.org



**Next Meeting: Thursday, October 4, 2007 at 7PM .
Location: Hayes Elementary School.**

Harold Davidson prepares to launch his rubber powered Convertible, powered by 16 strands of 1/8 inch FAI Sports Rubber with 100 winds. Pat Rose photo.



Dean Sala flies his Dual Ace with OS 46 engines humming.

While I was flying today (Sept 5), I noticed Gerald Bruce emptying and cleaning out the trash cans at the Skypark. Many thanks to you, Gerald. Your work makes the field a more pleasant place to be. PR

Also, don't forget to thank Harvey Thackston for his work keeping the sprinklers operational, and thus the grass watered. Thanks, Harvey.

Finally, thanks to Jim Patrick for his photos of the Giant Scale get together.



Danny Hull celebrating his new "wings" that he just now earned on Wednesday, Aug. 22. Danny was signed off by George Mateer. Harold Davidson photo.

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Flyin Fast - President's News By Michael Luvara

My how time flies. I'm sitting here out of town at the Reno Air Races real-

izing it's time for another edition of Servo Chatter and are thinking that it was just the start of summer the other day. We have had a great past few months at the SCCMAS. The airshow in July of course went off well, along with our club BBQ later in the month.

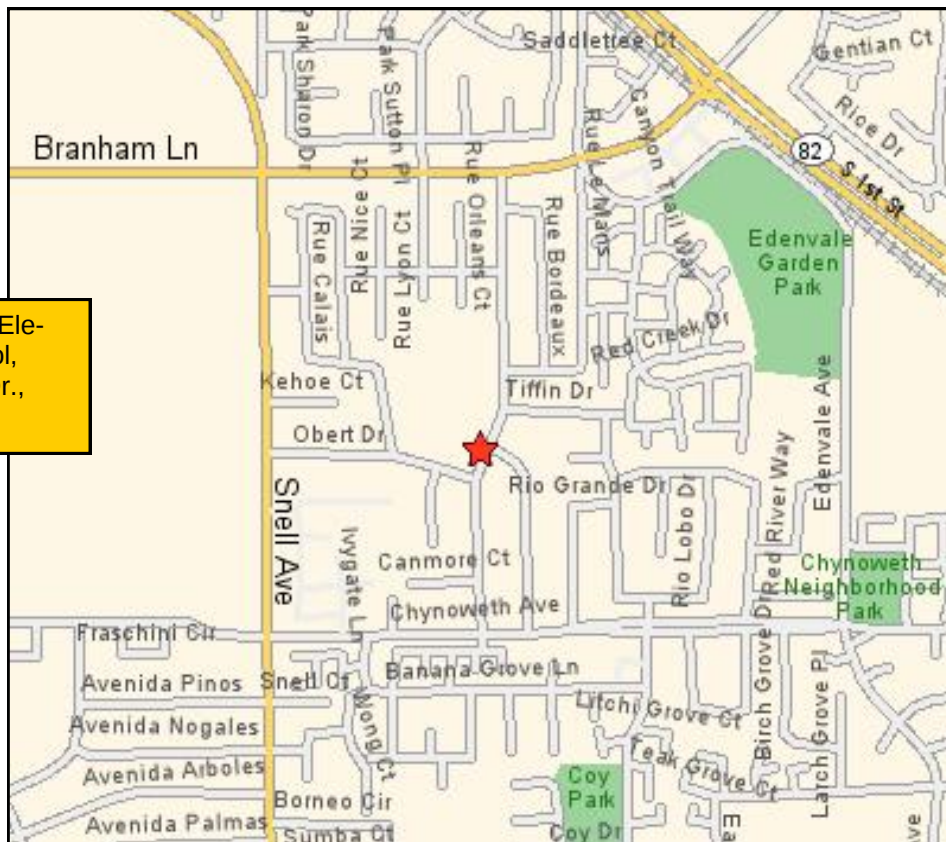
I don't have a lot to say this month, but do I want to sincerely thank everyone for their continuing support of the SCCMAS and its facilities. The

field is looking great and is being continuously maintained by our volunteer members. I cannot thank those enough that volunteer their time. Whether it's picking up trash, helping out in the snack shack, mowing the lawn, or just offering a hand, please know that it is truly appreciated.

There are still a few events coming up at the SCCMAS in the next few months. See Steve Smith's article for more information. In the coming months, we will begin looking at events and such for next year, along with maintenance items. Re-sealing the asphalt and painting the shack will be big on next year's list of to do items.

Until next issue,
Michael

Map to Hayes Elementary School,
5035 Poston Dr.,
San Jose.





From the Editor

By Pat Rose

rels. Do not bring food to the field and share it with the squirrels. By feeding the squirrels, we have created an aggressive bunch of animals who scour the table areas where we place our gear and planes.

P.S.: I took my truck in for an oil change to the GMC dealer yesterday. Yep, there was some damage to the engine wiring insulation, but nothing serious.

Little Monsters at the Field

On August 10 at the field, I was flying my Aero Works Edge and making the usual conversation when I happened to look over at my truck. What I saw sent me into the panic mode. There were about six ground squirrels jumping from the ground into the engine compartment of my truck! At first I stared in disbelief. Application of the PANIC button on my remote scared them away. Soon afterward they returned and I observed them jumping into the rear axle area of my truck. PANIC button again. This is ridiculous. What I once considered cute little animals has turned into aggressive little monsters that are making our field unusable. How can the Tomcat field be used if the little monsters are going to destroy our vehicles? Reports from other members have the squirrels jumping into the passenger areas of vehicles, destroying models, destroying automobile engine area wiring, destroying charge circuit wiring, rushing into the shack when the door is opened, etc. *Please listen: Do not feed the squir-*

Wednesdays at the Skypark

BTW, recent Wednesday mornings at the field have turned into old timer RC assist and free flight model demonstration time. See the cover and page 8. It's been a lot of fun to fly my old planes that have been hanging on the rafters for up to 15 years. When taken off the rafters, first there was a lot of dust to clean off, batteries needed to be replaced, fuel tubing replaced, etc. My old engines happen to be Cox TDs, which are no longer available. These Cox TDs are so fussy to tune!

We also have "experts" Jim Boes and Harold Davidson to offer free trim advice for the free flights. Did you ever try to build and fly a free flight model? Talk about a challenge. The idea is to have the model fly in a circle, spiraling up, and when power is exhausted, the model should spiral down. The model is released up wind because the wind causes the model to drift. ●

Upcoming Meeting: Thursday, October 4, 2007, 7 PM

The next meeting will be held at Hayes Elementary School, Thursday, October 4, 2007, 7 PM. See page 3 for a map to the meeting place. Raffle prizes will NOT include the usual - tools instead of a radio, a kit, adhesives and lots of other stuff.

Bring your latest project for show and tell and receive a free raffle ticket. Cold drinks and donuts during the break.

Future meeting dates: Wed. Nov. 28, Thurs. Jan 31, Wed. March 19th, and Thurs. May 15th.



From The Secretary's Building Board

By Rich Luvara

Meeting notes for 7/28/07

There were 81 members present
New solo was John Nourse.

Raffle

Winners of the raffle:
Steve Smith, T-34 kit
John Adams, Electric kit
Norm Sly, Slot machine tool
James Gale, Switch
Bill Cooper, Switch
Vern Bollison – Hardware
Don Coulter – Covering
Alex Parks – Wheels
Joseph Walsh – Wheels
Ken Kightly – Glass cloth
John Nourse – Covering
Dean Sala – Push rods
Carl Quinn – Push rods
Steve Culp - Hardware

Dumb Thumb

Won by Bervin Britt for flying the wrong plane.
Other candidates were Matt Campi ...he didn't pull up....Babe Caltibiano...had a slippery thumb? ●



John Adams takes the plane.

Raffle prizes provided by Aero Micro.



Mathew Smith took the plane.



Training

By Mike French

Anand Phatak is an articulate Silicon Valley engineer and a recent graduate solo pilot from our SCCMAS Flight Training Program. I have asked Anand to describe his experiences in his training for the benefit of new and potential SCCMAS flight students. He has graciously offered the following. - MF

What I learned in my SCCMAS Primary Flight Training

To fly a model airplane was something I had always wished since the time I saw a model air show back in my school days. It took me 20 years, however, to actually get into it. A tiny electric plane purchased by a friend inspired me to finally pursue this childhood dream. I started researching the clubs in the area and discovered SCCMAS on Google. One of the clubs benefits was free training. It had not occurred to me until then that this hobby needs a good amount of training. I picked up the phone and called the club. I was expecting a voice mail but actually got to speak with the president! He gave me good advice to visit the club and to see everything in person to get an idea of what to expect. I drove to the club and was very happy to see this wonderful facility. People were friendly and guided me as to how to obtain an airplane and contact the club's instructors. I called Mike French, the director of flight instruction. He willingly agreed to become my instructor.

Mike had emailed me an aircraft-readiness check list prior to the first training day. I followed the instructions, prepared my NexStar trainer to the best of my ability, and was quite happy with the result. Having a Mechanical Engineering degree, I thought that this would be a piece of cake.

I met Mike at the field on the first day. I was all too



eager to get my plane into the air and do my first aerobatic maneuver. We started by inspecting my aircraft. My plane went through serious scrutiny. He pointed out at least 10 hazards to flight with my plane. That came as a shock! And I thought my plane was fit enough to carry live passengers. But I couldn't disagree with anything he had noted. He explained everything to me in great detail and I agreed (to) go back and make the repairs. We didn't however discard my machine completely as we flew my plane's maiden flight that day.

I had thought it would take me 3 to 6 lessons to become a good pilot. After all, it is just child's play, isn't it? I had bought a flight simulator. I could take off and land on it. But I was dead wrong. I had never expected that flying R/C plane was quite so challenging and involved many safety precautions. I didn't know each plane has a "personality" which you need to get accustomed. I didn't know altering small

Training continued on page 13.



Treasurer's Report

By Jim Patrick

SCCMAS Profit & Loss
Cash Basis
July through August 2007

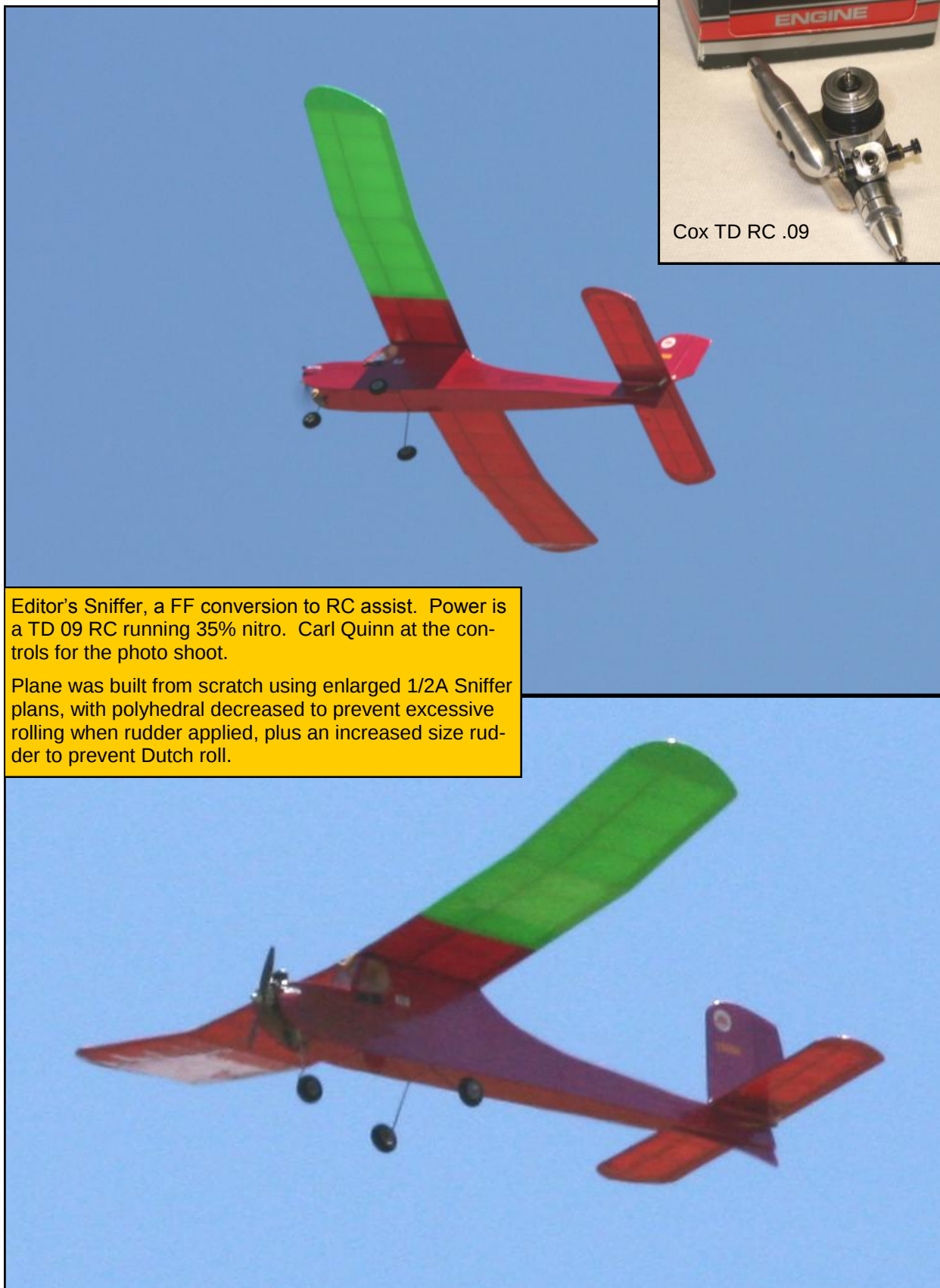
Ordinary Income/Expense

Income

Contest entries	500.00
Food sales	4,033.00
Membership dues	755.00
Airshow Raffle	1,082.00
Swap meets	270.00
Vending machine	561.00
Total Income	7,201.00

Expense

Advertising	216.10
Bay Alarm	135.00
Contributions	350.00
Equipment Rental	75.00
Food	2,431.00
Garbage service	345.82
Licenses and Permits	20.00
Miscellaneous	1,250.00
Postage and Delivery	534.20
Printing and Reproduction	360.86
Raffle supplies	872.95
Repairs and Maintenance	
Equipment Repairs	8,656.38
Field repairs	123.32
Janitorial Exp	50.00
Total Repairs and Maintenance	8,829.70
Sanitation service	1,477.74
Supplies	1,675.59
Telephone	
Internet	139.90
Telephone - Other	192.19
Total Telephone	332.09
Utilities	
Gas and Electric	628.81
Water	500.48
Total Utilities	1,129.29
Total Expense	20,035.34
Net Ordinary Income	-12,834.34
Net Income	-12,834.34



Cox TD RC .09

Editor's Sniffer, a FF conversion to RC assist. Power is a TD 09 RC running 35% nitro. Carl Quinn at the controls for the photo shoot.

Plane was built from scratch using enlarged 1/2A Sniffer plans, with polyhedral decreased to prevent excessive rolling when rudder applied, plus an increased size rudder to prevent Dutch roll.

2.4 GHz Radio Introduction

By Pat Rose

(This message leverages heavily from Mike Luvara's article ***The 2.4 GHz Phenomenon*** in the May 2007 issue of Servo Chatter.)

What is frequency, and BTW what is a radio? Think of a grandfather clock which has a pendulum that swings back and forth at a rate of one swing to the right followed by one swing to the left in one second. This clock's pendulum is operating at a frequency of 1 cycle per second, also known as 1 Hertz. So, let's assume we have an electronics circuit that operates at 72,000,000 Hertz—we'll call this 72 Mega Hertz or 72 MHz. This happens to be a frequency of operation to which we can connect an antenna and transmit electromagnetic energy into space. To receive the transmitted frequency, it helps to have a receive circuit that is tuned to the same frequency as the transmit frequency. A transmitted signal operating at 72 MHz or higher is considered a "radio frequency", because it takes a radio with tuned circuits to transmit and receive the signal.

Radio frequency emissions have a characteristic wave length that is inversely proportional to frequency*. In other words, the higher the frequency, the shorter the wave length. A 72 MHz signal will have a wave length of about 402 centimeters, contrasted with a 2.4 GHz signal with a wave length of 12.5 cm. ($2,400,000,000 \text{ Hz} = 2.4 \text{ GHz}$). It turns out that antennas for our RC radios work well to transmit their signal when built to 1/4 wave length. So a 72 MHz antenna would be about **100 cm** in length and a 2.4 GHz antenna would measure about **3.1 cm**. This explains the differences in antenna lengths used between the conventional 72 MHz radio and the newer 2.4 GHz radios.

It turns out that the receive antenna follows the same rules as the transmit antenna, so you will notice that the 72 MHz receiver antennas are much longer than the new 2.4 GHz receiver antennas.

Notice in the photo of the Futaba radio how short the transmitter antenna is compared to one of our usual 72 MHz radios.



Digressing a bit, assuming you are using a 72 MHz transmitter and you forget to extend the antenna—what you have is an antenna set to the wrong length for the frequency. Therefore much less of the signal strength is transmitted and you end up with a plane that is out of control soon after take off.

Digressing even further, see the July 2006 issue of Servo Chatter for an explanation of signal strength versus antenna orientation. The same principles apply to the 2.4 GHz radios.

Our 72 MHz radios transmit between Channel 11 (72.010 MHz) and Channel 60 (72.990 MHz) - we usually choose the frequency when we purchase the radio. Note that these conventional radios transmit on one and only one frequency. If two transmitters are turned on simultaneously with the same frequency, "Houston, we have a problem." The receivers installed in both airplanes are confused by the two simultaneous identical frequency signals and communication fails.

The 2.4 GHz ISM frequency band includes all frequencies between 2.4 and 2.5 GHz, a span of 100 MHz. This band is wide open and is utilized by such applications a microwave ovens, telephones, WiFi, and model airplane control. There is literally a "storm" of products using this frequency spectrum. There are two main frequency utilization schemes in use today in the RC hobby. First, there is the technique which finds two unused frequencies, then locks on these two frequencies. One frequency is used for the primary control of the model, and the second frequency is used if interference is encountered on the primary channel.

2.4 GHz Radio Introduction continued on page 10.

2.4 GHz Radio Introduction continued from page 9.

The second scheme in use is the spread spectrum technique which uses only one frequency - this frequency changes every 2 milliseconds (0.002 Sec) within the 2.4 GHz ISM band. Therefore frequency conflicts are short lived and there is essentially no signal interruption. (Disclaimer: spread spectrum technology is diverse and constantly changing.)

Since the operating frequency is constantly changing, it makes no sense to use frequency pin control for these radios. However, the AMA recommends that a 2.4 GHz pin is used when flying with these radios. Even though the AMA recommends 2.4 GHz frequency pins, RC pilots at the Tomcat field are seldom seen using them; it would be a

tough sell to enforce this rule.

One more final note: You will notice the 2.4 GHz receivers have at least two antennas. As explained earlier in the July 2006 issue of Servo Chatter, there is a difference in received signal depending on how the transmit and receive antennas are oriented. This effect gets worse as frequency increases. To work around this issue, the 2.4 GHz receivers use at least two different receive antennas with the goal that one of them will have a better orientation relative to the transmit antenna. ●

*

$$\text{Wavelength (meters)} = 300 \div \text{Frequency (MHz)}$$

2.4 GHz Receive Antenna Orientation

Now that I have your attention relative to frequency versus antenna length, I might touch on one more item. Just as the Earth can shade the moon from the Sun's light rays and cause an eclipse of the moon, a similarity can be imagined with the 2.4 GHz radios. With the orientation of the RC plane pointed directly at the transmitter, toward the pilot, the engine (a big hunk of metal) or other electrically conductive parts (as in retracts or carbon fiber) can "shade" the receiver antenna(s) from the transmitter signal and possibly cause temporary loss of control. No doubt the radio designers have spent countless hours working around the issue of received signal strength. Anyway, as soon as the plane changes direction be-

cause of this loss of control, the receiver antenna(s) is once again exposed to the RF signal and control is regained.

With the small size of the 2.4 GHz receive antenna, it is especially important to keep them away from other conductive material such as servo wiring, the battery, etc., or at least orient the antenna at 90 degrees to the nearby wiring.

Request for Comments:

Comments and corrections are welcomed on the **2.4 GHz Radio Introduction** and **2.4 GHz Receive Antenna Orientation**, and will be published in the next issue of Servo Chatter. ●

Hi Pat,

Todd and I have been traveling a lot to the various IMAC competitions this season. I thought it might be interesting to mention in the newsletter that 2 of the club members have qualified to fly at the Tucson Arizona Shootout this year.

Zak West finished 4th in the nation in points for the unlimited class and has also been invited to compete in the 4 minute freestyle.

12 year old Todd Bridges finished 5th in the nation in points for the Sportsman class. This is Todd's 1st year competing, skipping the Basic class and starting in the Sportsman class.

The event will be held Oct. 3rd through 7th in Tucson, AZ.

Dan Bridges

Giant Scale, June 9, 2007

Jim Patrick photos



Electric Fly-In, September 8, 2007

Pat Rose photos.



T-34 Novice Second and First Place Winners, James Gale and Steve Culp.



Jim Patrick photo.

Training continued from page 6.

settings to the control surfaces could have such a big impact on the flying characteristics. I didn't know how to deal with wind speed, wind gusts and direction. An untrained R/C pilot can be a big threat to his plane, to himself, to others and their planes on the field. I was about to discover and learn all this throughout my training.

On each instruction day, I learned something new. Mike explained each aspect in great detail: The importance of "TRACK" - a model pilot's preflight check acronym - (which helped me detect a big flaw in my plane at a later date which undoubtedly saved it from crashing), battery voltage checks, checks on the linkages, cracks, importance of not spilling fuel on the field, sensitivity of the controls, recovering from disorientation... the list went on.

Sure, at times I was too eager to fly and start seeking fun from this new exciting hobby, rather than practicing the essential details. But soon I started to realize the unforgiving nature of our

sport. You cut corners and you lose your plane. Worse, your plane could be a threat to others on the field. All this started becoming clearer with each session. So where was the fun factor in learning to fly models you might ask? After all we pursue hobbies because they are sources of great pleasure. I learned that in this hobby the fun part arrives after you pass the first part of your learning curve. When you learn to how to take off and land, maintain your plane, know how to save it from disasters (most of the time) and fly it safely, there is a great deal of fun here! When you do your first aerobatic maneuver, land your plane with style, save it from a dead-stick landing, you suddenly discover the treasure. It's all fun after that. But what good training could give you is a life-long ability of sustaining and enjoying this great sport. Learning it right the first time is the best way. I am grateful to SCCMAS and Mike French who has given me that opportunity. - AP ●



Safety

By Tim Jones

A reminder to watch speeds driving into and out of the park on the access road. The road is often shared with bicyclists and pedestrians. While there is the actual bike trail, the road is often mistaken as the actual trail path. There are often people on the road and in the parking area. So, please use proper caution and courtesy on the road and in the parking areas.

There are more and more 2.4 GHZ, or Spread Spectrum transmitters showing up every week, as they continue to prove their reliability and performance. One of the great features of these systems is that there is no need for a frequency pin to show ownership of the frequency. On the other hand, one of the faults of these systems is that there is no need for a frequency pin to show ownership of the frequency. Yes, you read that correct, this is both a good and a bad.

The good of course is that by using these systems, the danger of a frequency conflict is greatly reduced or eliminated, allowing one to turn on his or her transmitter or fly their planes without fear of being "Shot Down" or responsible for "Shooting Down Another".

So, what's the bad? I see several potential bads here that we must all watch for.

First by not requiring or continuing with the practice of using a frequency pin of some sort, I fear that a flier using the spread spectrum type of system will become accustomed to not getting a frequency pin. So, one day, he brings out one of his older transmitters, or is helping someone else, and proceeds to turn on his 72 MHz transmitter without

first ensuring that the "Frequency" is available. Or he may be flying with this transmitter while another flier finds the frequency pin available and proceeds to "Legally" turn on his transmitter. In either case the result will be a loss of a model and possibly a serious incident.

Secondly, one of the best and easiest ways for us as members to watch for use of our field by non members is to take a walk by the transmitter impound to check for current membership cards. The display of this card shows that this person has the proper and current AMA membership and experiences in flying to protect the park for all of us. Also, this card shows that this member has paid his share of the costs required to maintain our facility.

There are several frequency pins available identified as 2.4 GHZ. Please use these pins whenever possible, if for no other reason than to help others feel that proper frequency control practices continue to be in effect. I know that I personally get a little concerned seeing a transmitter in use or in the pits with no frequency pin.

The executive board is looking into additional upgrades to the frequency pin boards to provide for more 2.4 GHZ pins and places for user ID cards. Any other suggestions that any may have are welcomed for consideration.

Until the next time.....

Tim

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AMA Intro Pilots (These pilots can fly non-AMA members once, certain restrictions apply.)

Reggie Del Aquila, Mike French, Jack Sunzeri

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Mike Conrardy with his new Ultimate.
Pat Rose photo.

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