



AMA Charter Club #128
<http://www.HarborSoaringSociety.org>
<http://www.1hss.org>



HSS is the oldest AMA chartered R/C Soaring Club in the USA
Founded 1964

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Can HSS Lose Fairview Park as a Flying Field?

There is a noisy amount of opposition to any efforts by HSS to preserve our flying site. The general attitude is that we don't need to do anything. Especially when it infringes on personal rights. What seems to elude everyone is the number of flying sites that have been lost or severely restricted in the last several years. At least four sites have been closed. Not always due to safety issues, however, they were lost. These include the following:

- Soaring Union of Los Angeles (SULA) - Lost their Dominguez Hills site to a developer. They now have restricted flying at a park and a sports complex for less than 8 hours a week.
- Pasadena Soaring Society (PSS) - This group used to fly at the Rose Bowl parking lot. While the cause of the closure is not clear, they have not yet found a new site.
- El Dorado Silent Flyers (EDSF) - The El Dorado Park facility is now severely restricted to the extent that they cannot fly soaring competitions. This was caused less than a year ago when gliders flew in the landing path of near by Long Beach Airport.
- Silent Wings Soaring Society (SWSA) - The high school sports field that the club flew at was just closed June 11th 2005, because a glider shorted out some high voltage power lines. The club did not have an active Use Permit from the city. See details of this event elsewhere in this newsletter.
- Orange County Modeler's Association (OCMA) - This group of clubs has been paying \$18,000 a year to lease a corner of El Toro. They have been struggling with a six month lease extension for the remainder of the year, when on July 3rd, they announced that they have a major problem and may lose their site. More details below.
- Ross Thomas identifies another club (also known as PSS) that lost their Orange County site several years ago.

Can we lose our flying site? Most agree that we can, if we ignore the tenuous arrangement that allows us to exist there. The sport/hobby of model aviation has inherent risks, and crashing is one of them. Slightly over a year ago a young girl in England was killed by a 40 size power plane. This risk is something that applies to nearly all models, including the 5 pound gliders sufficiently strong enough to survive the spot landings required of them. We have a number of shortcomings that can be improved upon. These include use permits (not flying permits), financial responsibility, safety, and due diligence.

Use Permits

The City of Costa Mesa has specifically requested that we apply for a Use Permit similar to that granted to the railroad hobbyists east of Placentia. While the minutes of the Costa Mesa City Council do include approval first to fly gliders at Fairview Park, and more recently approval to fly electric powered planes, this is not a formal permit. We need to comply with the City's request and submit an application for a Use Permit. Previous officers of the club had applied for the permit to place our shed on park property, and a copy of that permit is available on our web site. It was easier for the City of Covina to close the SWSA site because they did not have a Use Permit.

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Financial Responsibility

Because of the risk to law suits (especially in California), most flyers realize that they need some form of public liability and property damage insurance. The HSS By Laws wisely recognize this and require every applicant to have membership in the AMA. The User Survey put together by Bill Eckles, and the analysis of resulting data by Bill revealed that 90% of park users have some form of insurance (AMA or home-owners). Unfortunately, there are still a number of users that lack insurance, and often the experience to realize how important this is. HSS as a charter club has AMA insurance, and purchases an "Also Insured" rider covering the City of Costa Mesa. However, this only covers AMA members. The city is still at risk with those flyers without any insurance. These are the people most likely to cause us to lose the field.

Safety

Our flying site unfortunately is laid out in a particularly unsafe manner. We presently have a paved pedestrian walkway traversing right through our landing and take-off area. While the AMA sanctions the club and events at our field, they do not really approve of our layout, and there is a chance that the club could lose its charter if any problem were to occur. With the planned grading of the mounds north of the pedestrian path, we will be able to lay out a safer runway. However, we still do not meet the AMA Recommended Site Specifications. We won't have barrier fences, designated pilot positions, and adequate space between the flight line and spectator area. Protective fencing is thought to be permanent, and the city will not allow any permanent installations. We need to propose a compromise to the city concerning barrier fencing. If we were able to place a number of unobtrusive fence post holes along our flight line, we could place temporary poles with nylon fencing (as done at El Toro and San Diego mid-winter event) as safety barriers. This is somewhat inconvenient, but not much more effort than it takes to set up a winch and retriever.

Pilot safety is a separate problem, and requires stricter attention to our field rules and frequency control. The E-mail that follows this article is an example of a breakdown in safety procedures. As individual members, we need to follow our own rules and assist guests, particularly beginners, in learning good safety protocol.

Due Diligence

The term "Due Diligence" is a legal term suggesting that a person who saw a risk and tried in various ways to eliminate or reduce that risk, is not as much of a subject for law suits as one who ignores the problem. As a club, HSS is beginning to build a record that shows our due diligence towards improving the safety at our field.

Our efforts include:

- Meetings with the Costa Mesa Parks Department in which we encouraged them to grade a portion of the mounds north of the walkway so that we can move our take-off and landing area away from the public walk.
- Discussions with the city bringing up our concern over those park users who fly without insurance. The city recognizes its risk in these cases.
- Proposing a plan based upon the Lilly Shapelle Park program used by Laguna Niguel Soaring Club (LNSC) to ensure that flyers have financial responsibility. This plan would not restrict beginning flyers, and not require pilot certification as does the LNSC program as well as the field rules at Torrey Pines.
- Assisting the city by developing a (city directed and approved) Park User's Survey, then collecting the survey data and providing the analysis to the city. (Survey results are on our web site).
- Attempting to improve the flying field safety by more closely following the guidelines published by the AMA for flying field layout.
- Improve the Field Safety and Procedures placards displayed for all flyers.
- Establishing HSS as a non-profit entity with the IRS.
- Becoming incorporated in the State of California.

The most bothersome point seems to be that we are looking at a way to guarantee everyone's liability insurance. A Flyer's Permit is one method. The city can mandate an insurance requirement for park users, and the AMA concurs. Anyone with alternate opinions on the points suggested above should contact the Editor by E-mail or phone. All constructive arguments are welcome and will be published in this newsletter. (Ed.)



E-mail from an Irate Fellow Flyer

The following E-mail was received from John Rittenhouse, and illustrates what happens when field rules are not followed strictly. He has sent copies to most officers. Bill Eckles, our General Director, provided the reply, which follows the initial communication.

7-11-05

Gentlemen,

I am writing this email on an issue of great concern to me... and I believe to you as well. Yesterday morning (Sunday) I was involved in an incident that destroyed my aircraft and jeopardized the safety of the visitors and participants.

First let me identify myself. My name is John Rittenhouse. I am not a member of your club. However, I am an experienced R/C pilot, having first flown R/C aircraft in 1970. In fact, most of my flight hours were accumulated (in the late 70's and early 80's) on the slope adjacent to your current flying site. My last flight occurred in the summer of 1985. The occasion of my last flight, was the first test flight of a "JP Models" Dart... a 100 inch wing-span sailplane. An individual by the name of Paul Bender (the owner of Hobby People) turned his transmitter on my frequency, and destroyed my aircraft... no apology was given. That was virtually the last time I flew an R/C model in the last twenty years!

Back-to today. I arrived at the Estancia flying site at approximately 10:00 A.M. My intention was the **first** test flight of an aircraft called the "Timeless Flyer" which is a modernized (motorized) version of an old time "free-flight" style aircraft.

The frequency board had numerous pins/channels in use, in fact, it struck me that there were more pins in use, than there were actually aircraft flying. In any-event there were NO pins that did not have any names on them... that were not in use, of this I am sure! I randomly selected a wooden pin with the name "George" on it, and placed it on my channel (50). I then proceeded to the bench area and prepared my aircraft (including a range check). I made a short flight, and landed to re-trim my aircraft. I then re-launched my aircraft from the designated "power aircraft" location north of the benches. Within 30 seconds my aircraft went out of control, diving straight down full power from about 150-200 feet. The impact point was substantially less than 100 feet from a group of glider pilots.

My zero time: model, receiver, servo's, motor, speed controller, LiPo battery... had just been reduced to junk. But one thing was for sure... having well over a thousand hours of experience... I know I did not cause this crash. My frequency was jammed by someone else!

I picked-up my pieces and did a range check... my servos were chattering but that could have been as result of the crash... but in my mind I knew exactly what had happened! Anyway, I gathered my belonging and went back to the benches.

To the point... I went over to the frequency board, and to my utter-disbelief, someone had put their clip on the end of mine! Let me make this clear... there were now TWO CLIPS ON THE SAME FREQUENCY... completely disregarding the safe operating protocol on the board!

I yelled out: "How stupid is this!" Who doubled-up their clip on channel 50! Some fellow by the name of "Sam" shouted-out that he was on that frequency, and that he had asked around if "George" was on frequency. He didn't ask ME if I was "George"!

Let's be clear here... Some of the aircraft at the field today were capable of flying WELL OVER 100 miles per hour. The size, weight, and speed of these models could literally kill someone, if it were to hit them! My point being that there is absolutely no excuse to not do a proper frequency check prior to flight.



R/C modeling is a great hobby; I have enjoyed it for most of my life, but let's remember flying at Estancia is a privilege, not a right! In this litigious society... any inkling of liability will cause the City Counsel to revoke EVERYONE'S flying privileges.

Let's be clear here...

- ◆ Under NO circumstances is it permissible to double-up one frequency pin upon another!
- ◆ Putting names on frequency pins, does nothing to enhance safety. (how do you know there is only one "George" flying at the field at any given time... or as in my case... it reduced the number of available (no name) pins for members and guest.)
- ◆ Another eye-opener... take a walk past the frequency board at night or early morning... it's commonly got several pins on it... even when no one is there!

The point is... the current system of frequency policing is inadequate!

Regarding me... I am very disgusted and disheartened by today's events. My first new aircraft in twenty years has been destroyed on its first flight... in the same way my last aircraft was destroyed twenty years ago.

Yes, we are talking about a model airplane, and in the grand scheme of things it doesn't really matter. However, I am the kind of person to whom principle and integrity matters. I will say...to the credit of the club... there was one member who had the integrity to offer his constructive opinion and assistance (I didn't get his name, but he drove a white SUV)

Can the club afford the liability to have a member behave in such a reckless manner?
Can the club risk losing one of the few remaining flying sites in Orange County?

I look to you now... officers of the "Harbor Soaring Society, do you have the integrity to stand-up and take corrective action?

I await your response!

Sincerely,

John Rittenhouse

Bill Eckles reply:

Hi John,

I am truly sorry to hear your story. Please be aware that the issue of flying field protocol and the safety of the site is of very high importance and is a timely subject to the club. We are working with the city of Costa Mesa to improve our system to prevent just the sort of mishap that occurred with you on Sunday. Mishaps are few and far between, but the possibility of both costly and injurious accidents is omni-present. I would appreciate a phone call and, perhaps, you would be willing to attend a club meeting to discuss this event. I look forward to hearing from you soon and would appreciate hearing your ideas to improve our environment. I called you and the voice mail cut me off before I could leave my number.

Sincerely,

Bill Eckles

(949) 725-0050



Minutes of HSS Meeting Held 5 July 2005

Our President, Karl Hawley, opened the meeting at 7:35 PM. We had 3 officers and 7 members present.

Karl began by describing the 4th of July activities in his neighborhood and at Fairview Park.

Bill Eckles reiterated that Costa Mesa Parks Department Maintenance Manager Bruce Hartley reconfirmed that the planned grading of the mounds is still scheduled for the last two weeks of July. This is a one day operation, and Bill Eckles will be notified when a specific date is set. Karl requested that a bulletin be posted that announced that club help is needed to smooth the grading and rake up rocks uncovered in the process.

Karl says that the last Concert in the Park is scheduled for August 16th and that HSS members are needed to sell raffle tickets.

Bill Eckles, who has been our representative to Friends of Fairview Park, noted that the organization no longer is having regular meetings. These will be scheduled when needed, with the next meeting planned for October.

Karl asked Jim Hanson to check with Tom Copp about offering trophies for the monthly HSS contest.

Karl reminded everyone that we still need a club vice president, and that it is time to start planning for the election of officers for 2006.

Bill Eckles has not heard anything from the AMA concerning their opinions on a permit system for Fairview Park flyers. Since the City of Costa Mesa had asked us to put together a proposed plan for handling the concern over flyers liability, Bill suggested that a rules committee be formed of the principal officers of the club. Karl said he will set a date for that committee.

Jim Ward read a letter of appreciation from the Wetlands Conservancy, thanking him for his very excellent aerial photos taken of the proposed River Park and wetlands area. The letter included a check for \$200 to cover part of the expense incurred by Jim in his efforts. (A copy of this letter appears elsewhere in this newsletter. Ed.)

As part of show-and-tell, Jim Enger brought a new Lithium Polymer battery charger recently offered by Great Planes through Tower Hobbies. This new charger is made by Electrify and is called the PolyCharge-4, model GPMM 3015. It is capable of charging up to four Li-Poly batteries, each with a maximum of 4 cells, at 3 Amps.

Respectfully submitted by Fred Hesse, Secretary.

Park Department Grading Progress

Bill Eckles has continued to check with the Costa Mesa Parks Department concerning the plan to level the mounds. This is his latest reply.

I didn't get formal dates for the mounds flattening, but Bruce Hartley said it would be late July. More important, he would call me to "OK" and help put out the stakes. So, we'll have input. I'll plan to have you corroborate our wishes as Jim Parsons likely will be disinterested. As I mentioned, Bruce would like to have a crew from HSS help with raking the 1" type rocks from the grading, so we'll want to get some volunteers for that.

Chris Adamczyk who is a licensed surveyor, and familiar with grading details, has volunteered to work with the Parks Department in setting out the stakes. Bill Eckles will continue to report when the formal grading schedule has been set. If possible, Tuan Le will alert members by E-mail as to when help will be needed with raking rocks.



Sad Words From SWSA

The following report was taken from the Silent Wings Soaring Association web site.

Posted by: Dan Borer On 06/14/2005 02:56 PM

The city of Covina has revoked our permit to use the field.

"It is with great sadness that I have to report that the flying field of the Silent Wings Soaring Association has been lost. The city of Covina has notified SWSA President Ron Adams that we may no longer use the school property as our flying field. The incident of Saturday, June 11, 2005 drew attention to our activities and the neighbors have inundated the city offices with complaints. In discussing the situation with the city, Ron was advised that the city had our AMA issued insurance documents but not an agreement for us to use the property. Ron has worked diligently to keep the permitting process current but this past renewal period has been difficult to say the least. The city has decided that the easiest way out is to notify our organization not to use the site any longer."

The editor of the Thousand Oaks Soaring Society (TOSS) had the following comment to make in his newsletter appropriately titled "Tossup".

"The incident to which Dan Borer was referring occurred on June 6th. when a sailplane landed on some power lines adjacent to the field. This, as we all know only too well, does draw attention to our activities. We have been lucky so far — we have a permit and our local Edison people (and the neighbors) seem to be almost indulgent but it does remind us of the need to be really careful about not annoying those neighbors. (So having said this I'll (*i.e. Ed*) will confess to grazing the lines while lining up for a landing — no bang, just a cosmic "THUMM" like someone picking a very large guitar string. I was being smiled upon that time — but it does illustrate that it can happen anytime to anyone."

There was no discussion as to the damage sustained by the plane. However, a similar occurrence happened to a large bird landing on a power pole. We heard the cosmic "THUMM" but found only a few singed feathers left on the ground.

SWSA had been attempting to acquire another flying site through the U.S. Army Corps of Engineers. They had made an application for an area referred to as Fish Canyon in the vicinity of Covina.

Notes From the Friends of Fairview Park Meeting

Bill Eckles who is our club representative to the Friends of Fairview Park Committee, had this to report from their last quarterly meeting.

I went through the minutes of the Friends of the Park meeting (Marha Uribe was there and likely Karl, too) and found only the following to be interesting to us:

- Several broken park map holders were reported as well as some empty ones. Carol Proctor will discuss and work with Maintenance Services and Park Rangers for monthly checks and restocking. [Might be a good area for HSS to get involved as we're down there so often.]
- June 25 there is a twilight tour and train ride. (No need for us to "do" anything, but the planes are pretty at day's end and we can make a good impression on the participants.)
- The committee (me?) should be at the August 16 Concert (*The Answer*) even though the "Park O Rama" has been scrubbed. We should have a couple people to help set it up at around 5:30 to hand out brochures, sell kites, conduct a 50/50 raffle and donated hand-made afghan. Harbor Mesa Lions will help with the raffle. [We should have at least one person with an HSS shirt on.]
- The next meeting is not until October 5 to discuss final plans for the Lounge Chair Theater which is scheduled for Saturday October 15. [We should help with that. Lots of set up and a nice community event.]



Recognition for a Great Community Service

The following letter of commendation was received by Jim Ward for his huge effort in taking aerial photos of the surrounding area for the Huntington Beach Wetlands Conservancy. While Jim expended much in time and money on this project, it's nice to receive a little gratitude.



P.O. Box 5903
Huntington Beach, CA 92615
(714) 963-2123

May 10, 2005

Mr. Jim Ward
Address

Dear Mr. Ward;

On behalf of the Huntington Beach Wetlands Conservancy (HBWC), I would like to thank you for the wonderful aerial photographs you took of our wetlands from the Santa Ana River to Beach Blvd.

As you know, some of your photographs were enlarged and displayed at the Costa Mesa Fairview Park Earth Day event. It was good to meet with you and see the actual plane used to take the photographs. HBWC attended another Earth Day event the following week. Your photographs again served to educate the public about our organization and how we plan to restore the wetlands.

We look forward to working with you again to utilize the technology you described to us in order to monitor the progress of our restoration process. It would be advantageous to see the growth trends of our wetlands over specified time periods. The level of sophistication and versatility of your aircraft is amazing and the quality of the photographs is outstanding.

The enclosed \$200 check is HBWC's expression of gratitude which we offer to assist you in further development of your innovative aerial reconnaissance techniques as they are applied toward this type of community service work.

Thank you again for the wonderful service you provide for us.

Yours truly,


Lena Yee Hayashi
Chair



Cell Phone Radio Interference

The following article was posted on the Charles River RC Club Allegro-Lite Bulletin Board. The internet address is <http://groups.yahoo.com/group/Allegro-Lite/>.

Radio Interference –

Be careful with the (Multiplex) synthesizer module...! Ali Mashinchy (spelling?) in the UK lost his large-scale turbine powered Jet Ranger in what was deduced to be a cell-phone interference with his Multiplex transmitter with synthesizer module. In tests afterwards they were able to prove that a mobile phone being used nearby causes serious interference. Not a problem with the Multiplex transmitter itself, just with the crystal-replacing synthesizer module.

On the swamping issue, Multiplex used to state that their 'superior' transmitter circuitry gives a signal strength of 1 watt, versus the 0.75 watt signal from most other transmitters, even though their TX only uses 6 cells. So maybe that 1-watt signal close-in could swamp your receiver.

For what it's worth. Richard Knott

SCSC Competition 26 June 2005

Inland Soaring Society (ISS) conducted the fifth SCSC thermal duration competition last Sunday June 26th. Unfortunately, results have not been posted. However, ISS has a new web site www.glideiss.freesevers.com where results are sure to be posted soon. Because of the site problems with some of the other clubs, ISS is planning to conduct another SCSC competition on Sunday, 26 Sept 2005. This will be held at the Ben Lewis Sports Complex, 3700 Placentia Ave., Riverside, which is located close to the Reid Park Community Center.

HSS Club Competition 3 July 2005

While apparently over 20 contestants participated in this HSS club event, no results are available.

New Club T-Shirts

Karl Hawley has received the new shipment of HSS T-shirts. They have the club logo on the back in full color, and a small sailplane on the front. These high quality shirts are priced as follows: T-Shirt, no pocket, \$5; T-Shirt with pocket, \$7; Golf shirt with a polo collar and a front pocket, \$13. These are available to all members. Contact Karl and get yours before they are all sold out.

From The AMA Web Site**2005 Flying Site Development Improvement Grant Recipients**

This year AMA gave away more than \$33,000 to clubs who participated in the Flying Site Development Improvement Program. Of 29 clubs applying for grants, 20 received grant money! Applying is so easy! The application and instructions are located on our Web site at www.modelaircraft.org/PDF-files/712.pdf or you can call (765) 287-1256, ext. 270 or 272 to receive a copy.

Although grants have already been awarded for 2005, you can apply for 2006.

Congratulations to all the clubs that received grant money, and for those that did not, we extend our best wishes for a successful 2005 flying season and we hope you apply again next year.

When HSS members met with City of Costa Mesa Parks Department in October of 2004, we had proposed to apply for one of these grants to assist in developing our flying site North of the walkway. The Parks Department was extremely appreciative as it showed that we were willing to assist in the cost of improvements. However, nothing was done, and we missed the March 1st deadline for 2005.



And Other Stuff From The AMA

AMA offers some fascinating articles, usually added information to an article that was run in *Model aviation*. Here are some special articles that are available on the AMA web site.

From the Ground Up

Model Aviation's groundbreaking series for newcomers to the hobby. This series has 20 articles written by Bob Aberle, and includes a lot of basic electric power plane information.

Project Extra

Online only, a compliment to a six-month series of articles in *Model Aviation*. This project is gas engine oriented, but it is much more applicable considering what Dan Redfern is doing with his very large electric Extra.

Capturing Models Digitally

Tutorial covering essentials of digital photography.

Interview with Dr. Paul MacCready

Lifelong modeler and aeronautical engineer challenges Americans to "do more with much less"

Two Sunsets and Still Flying

Transatlantic flight revisited! Read the first-person account of this historic achievement. More information on the 1880 mile, 38 hour, flight by an RC model.

The Next Era in Radio Control

A year ago at the RC Expo we reported on the first of the new Spread Spectrum (cordless phone technology) radios being developed for RC models. Nomadio Systems introduced their "Sensor" model digital R/C control system which has a 2.4 GHz base band. This year they were back with their improved system, and accompanied by a new competing product called Spektrum DSM distributed by Horizon Hobby. This is definitely the coming thing for radio control with its interference free base band, 8 inch antenna, and automatic channel selection. What is more, the radio link is bi-directional, meaning your model will be able to down link information like altitude, variometer data, battery voltage, motor RPM and many other items that could help you fly better and safer. Unfortunately, the first products that are available now are designed for R/C cars. However, they definitely plan on offering this technology for aircraft after the reliability has been proven.

The features of the Nomadio Systems Sensor model begin with synthesized frequencies selected after a clear channel is found automatically. There are no conflicts, as both the transmitter and receiver contain synthesizers. The frame rate (that is the rate that all control channels are transmitted) is 100 frames per second (our present radios are only 50 frames per second), and the 4096 steps per channel is two to four times the resolution of what we have now. The radio system is two-way communication so that conditions in the car or plane are down linked to you. Once down linked, the transmitter can vibrate for critical conditions, or have sound provided to you through headphones, allowing you to keep your eyes on what you are doing. The receiver contains a microcontroller that manages fail safe conditions, and is easily reprogrammed to accommodate new features. Programming is done through your PC which makes basic operation simple, and allows updating software with new features. This is a fascinating radio system, and more information is available at www.nomadio.net. The Nomadio Sensor was available as a complete system at the show for an initial price of \$500. This should come down as competition develops.

The latest system called Spektrum DSM is developed and distributed through Horizon Hobby. They have wisely adapted this technology to existing (model car) radios by removing the old RF module and inserting the Spektrum DSM module in its place. A new receiver is required, but they are targeting a price of about \$160 for the transmitter module and the new receiver (It was \$250 at the show). Spektrum offered a slick 20 page brochure on their product that provided extensive introductory information about this new technology. For further details, check their web site at www.spektrumrc.com. The following paragraphs are copied from this brochure.



The Next Era in Radio Control (Continued)

DECIPHERING DSSS AND FHSS

The FCC requires that any device that operates on the 2.4GHz spectrum is required to have some type of "collision avoidance" technology, which is a fancy way of saying that it absolutely can't interfere with other devices operating on the same frequency. It's technology that's never been available in the RC car market, but now it's the basis of what makes the Spektrum such a significant leap in technology. There are two standards of this so-called collision avoidance, each with a different approach to guaranteeing reliable operation. Although it's a little techy, it helps to understand the differences between the two methods that provide incredible signal stability and security against interference—so here's the scoop on "FHSS" and "DSSS."

FREQUENCY-HOPPING SPREAD SPECTRUM (FHSS).

The FHSS standard means that the radio system rapidly jumps from one channel to another using a random sequence of channels. Here's how it works: a code at the end of every string of data sent from the transmitter to the receiver tells the receiver the next channel in the sequence. For example, the transmitter might "tell" the receiver, "left, left, left, left, switch to channel 51." The signal jumps randomly from channel to channel hundreds of times per second. Other systems using this standard use different random sequences, and although there's a remote possibility of crossing channels, the resulting interference would last only milliseconds, so you wouldn't be able to detect it.

According to Spektrum's designers, there are two significant elements of the current FHSS standard that make it less than ideal for RC applications. First, the latency time (response time) with the FHSS standard is typically about 50 milliseconds. For reference, the Airtronics MS out of the box has a response time of about 12 milliseconds, and the ultra-fast Futaba HRS system clocks in at about 8 milliseconds. The fastest FHSS-based systems the Spektrum crew tested had response times of about 25 milliseconds, which is more than twice the response time of a standard M8. The second drawback is the system's response to interference. In the event of signal interruption, it can take 2 to 4 seconds for the transmitter and receiver to resynchronize. The inability to control a moving vehicle for up to 4 seconds would obviously be unacceptable.

DIRECT SEQUENCING SPREAD SPECTRUM (DSSS).

This is the system used by Spektrum. The DSSS standard is unique in that it hunts for and locks into a single channel; there isn't any channel-hopping. When the transmitter is turned on, the module scans and locks on to any channel that is not in use. Because of the 2.4GHz spectrum's collision avoidance requirements, locking into one channel requires different anti-interference measures than those implemented in FHSS systems. A DSSS-based system spreads the RC data over a wide bandwidth using a pseudorandom noise code. The receiver knows its transmitter's spreading code and can distinguish its intended radio signal. Spreading has the additional benefit of digitally increasing the range of the system for the same power. A further security method particular to the DSM is the use of a Globally Unique Identifier code (GUID). This code is encoded into every RC data packet. The GUID is one of 4.2 billion potential codes.

There are other advantages to these new radios. The 2.4 GHz band is very far from the frequencies in which most model-generated interference occurs. Motor arcing, metal parts contacting each other, noise from a speed control and the vast majority of interference that comes from within your RC model happens mostly below 300 MHz. At 2.4 GHz, the system is immune from the nuisances that plague our current radio systems, and that eliminates the need for anti-interference measures such as motor capacitors and other devices.



New DSP Receiver

A new, very small, FM receiver made by Sombra Labs, called the Shadow 3 is now available. This is a synthesized, digital signal processing (DSP) design that does not require a crystal, and can be reprogrammed to any channel at the field. Here are some enticing details of the many unique features.

Sombra SHADOW 3. A 7-Channel Crystal-less Receiver

- Sombra Labs introduces the Shadow-3; a synthesized ultra-light, ultra-small 7-channel receiver with advanced DSP signal detection, noise control and glitch suppression algorithms.

Here are some features of this compact receiver:

- Dual conversion, full range. Ultra narrowband (5kHz or better)
- Smallest and the lightest 7-channel receiver in the world.
- Excellent sensitivity and IP3 performance.
- Synthesized "crystal-less" operation.
- Cascade two receivers for 14 channel operation.
- Frequency selection through a modular, extremely rugged, reliable and easy to use programmer utilizing Sombra Labs' patented technology.
- Three user selectable and programmable failsafe modes.
- In-field frequency re-programming can be achieved 100% reliably even in an extremely busy RF environment (RC events, competitions, etc.).
- Automatic positive/negative transmitter shift detection.
- Shadow-3 will seamlessly cover 72Mhz (Air), 75Mhz (Surface) bands; no changes required to the product.
- Most advanced DSP signal detection, noise control and glitch suppression algorithms.
- Fully FCC/ic (Industry Canada) compliant, meets all AMA guidelines.
- Dimensions: approx. 36mm x 22mm x 14mm.
- Weight: approx. 8gms with full length antenna.
- 29Mhz, 35Mhz, 36Mhz, 40Mhz, 41Mhz, and 50Mhz (HAM) versions coming mid-summer 2005.
- Horizontal pin version will be available by mid-summer 2005.

This receiver is now available from Kennedy Composites, www.kennedycomposites.com, for a price of \$79 for the Shadow 3 receiver, \$15 for the universal programmer, or \$90 for the set. An Acrobat (PDF) copy of the Operator's Manual is available on this site.

The following is a technical description of the Sombra Shadow 3 receiver.



Shadow Receivers

Why the Shadow is better than the competition. In short, Sombra Labs DSP features better noise rejection and glitch immunity while giving the lowest servo jitter and fastest servo output. These two parameters can be very critical in high performance models, excessive jitter can induce unpredictable behavior in a high-performance model, while excess latency can cause delayed control response from a model that can be catastrophic (e.g. in a high-speed helicopter/cars split second decisions need to be taken).

The DSP functionality of the Shadow is an extremely efficient adaptive noise and glitch filtering algorithm that takes into account the signal to noise ratio of the baseband signal. In simple English, we digitize the analog baseband signal and process it digitally with the help of a microprocessor, a simple analogy would be DVD (digital) versus a VHS tape (analog).

The DSP algorithm has multiple levels of filtering that is performed on the signal before it is allowed to be passed on to the servos. Here is what happens on the Rx upon power-up:

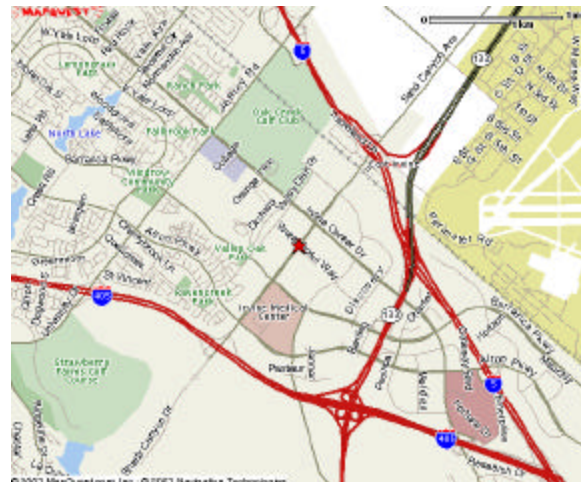
1. The Tx signal recognition algorithm on the Rx analyzes the transmitter characteristics, it identifies among other things the shift of the Tx, number of channels, frame rate, etc. From here onwards only frames matching these characteristics will be allowed to "graduate" to higher levels of filtering. You can see this in action by performing this simple experiment: Take two different Tx on the same frequency (e.g one 4ch. The other 7ch.). Turn one Tx ON and let Shadow register it, now turn the first Tx OFF and turn the second Tx ON, the second Tx commands will be rejected even though it operates on the same frequency!. To register the second Tx, Shadow will have to be power-cycled. We call this basic sanity or transmitter recognition and Level-1 filtering.
2. Every incoming baseband signal is continuously sampled and digitized. Our custom and proprietary digital signal processing algorithms are applied to baseband and valid signals can be recovered and reconstituted even in extremely noisy environments. We call this level-2 filtering. Once a frame is processed it is passed to level-3 filtering.
3. In level-3, we do another set of tests that qualify the frame further, e.g. the servo output signals in the frame, the proper sync pulse of a PPM frame, the low and high-phases of each pulse, etc. All of these have to pass a rigorous qualification test before the signal is sent out on the servo pins.

All the above happens at an extremely high processing rate. The benefits of our DSP algorithm to the user are an extremely reliable communication link, with the least amount of possibility of glitches, jitter and/or loss of Tx control. We also provide the least amount of latency and processing overhead of any of the competing products on the market and this shows clearly in high performance models (e.g. helicopters and high speed RC cars have very low tolerance to latency).

August 2nd Meeting Notice

The next meeting will be Tuesday August 2nd 2005, at the Irvine Water District. The address is 15600 Sand Canyon Drive. There are exits for Sand Canyon Drive on both the 5 and 405 freeways.

The business meeting starts at 7:30 PM. Come find out how you can support our club.



Harbor Soaring Bulletin Board

A new E-mail/bulletin board for HSS has been opened, called the CostaMesaSoaring group at Yahoo! Groups, a free, easy-to-use email group service. (This group was moderated by an unknown someone who turned out to be Jeff Gortatowski - Ed).

To learn more about the CostaMesaSoaring group, please visit

<http://groups.yahoo.com/group/CostaMesaSoaring> (where you may join the group if you wish - Ed).

To start sending messages to members of this group (after you have joined), simply send E-mail to CostaMesaSoaring@yahoogroups.com.

If you do not wish to belong to CostMesaSoaring, you may unsubscribe by sending an email to CostaMesaSoaring-unsubscribe@yahoogroups.com.

Note that we may be able to use this bulletin board as a method of notifying all members of important information that needs immediate distribution. More to come on this concept.

Coming Events For 2005

Tuesday	August 2	HSS monthly meeting, 7:30 PM, at the Irvine Water District offices. Address is 16500 Sand Canyon Avenue, in Irvine.
Sunday	August 7	Seventh HSS monthly club thermal duration competitions at Fairview Park.
Sunday	August 7	Built up Bent Wing Contest for RES, Thousand Oaks Soaring Society (TOSS), Redwood School. Arthur Mcnamee CD, 805-526-6292.
Tuesday	August 16	Concert in the Park, Fairview Park, Costa Mesa.
Sunday	August 21	Flying Aces Squadron 70 Golden Age Flying Scale at Fairview Park, Costa Mesa, contact Clint Brooks (Contest Director) 310-350-3192.
Sunday	August 28	Seventh SCSC thermal duration contest at Thousand Oaks Soaring Society (TOSS), Redwood School, Thousand Oaks, CD Mike Reagan, 805-529-5513
Sunday	September 4	Eighth HSS monthly club thermal duration competitions at Fairview Park.
Tuesday	September 6	HSS monthly meeting, 7:30 PM, at the Irvine Water District offices. Address is 16500 Sand Canyon Avenue, in Irvine.
Sunday	September 25	Eighth SCSC thermal duration contest at ISS, Ben Lewis Sports Complex, 3700 Placentia Ave., Riverside, CA. See www.glideiss.freesevers.com .
Sunday	October 2	Ninth HSS monthly club thermal duration competitions at Fairview Park.
Tuesday	October 4	HSS monthly meeting, 7:30 PM, at the Irvine Water District offices. Address is 16500 Sand Canyon Avenue, in Irvine.
Sunday	October 30	Ninth SCSC thermal duration contest at TPG, San Diego, CA.
Tuesday	November 1	HSS monthly meeting, 7:30 PM, at the Irvine Water District offices. Address is 16500 Sand Canyon Avenue, in Irvine.
Sunday	November 6	Tenth HSS monthly club thermal duration competitions at Fairview Park.
Sunday	November 20	Tentative tenth SCSC thermal duration contest by SULA at (TBS).
Sunday	December 4	Eleventh HSS monthly club thermal duration competitions at Fairview Park.
Sunday	December 11	Flying Aces Squadron 70 World War II Flying Scale at Fairview Park, Costa Mesa, contact Clint Brooks (Contest Director) 310-350-3192.

Stuff For Sale

Anyone with planes or equipment that they wish to sell may advertise for free in this newsletter. Contact Fred Hesse by phone or E-mail as shown on the last page of this newsletter.



Stuff For Sale (Continued)

1Meter R/C Sailboat (sloop) with servos and radio. Designed and made by Swede Johnson. Competitive. Extra set of sails. Extra, faster balast/centerboard. Includes stand. The radio is an old Futaba AM and the boat has only two servos, a large main/jib combined and the rudder. Asking \$300 OBO. Contact Bill Eckles at 949-725-0050 or tunabiker@cox.net

Futaba 9ZAP. This is a Futaba 9ZAP (9 channel) Radio and SYNTHESIZER MODULE. Includes wall charger, transmitter battery, aluminum case and manual. Asking \$450 OBO. Contact Mike Gaczowski at 949-632-1747 or mgaczowski@cox.net.

Futaba 8UAPs-PCM. This is a Futaba Super 8 channel Radio and channel 33 module. Includes wall charger, transmitter battery, aluminum case and manual. Asking \$150 OBO. Contact Mike Gaczowski at 949-632-1747 or mgaczowski@cox.net.

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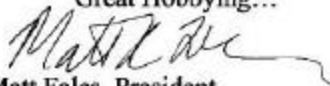
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See our NEW web site at www.HarborSoaringSociety.org for a bright new club image. Our other web site can still be viewed at www.1hss.org. Both will feature the latest news, the color issue of Plane Rap, and more.

**NEXT CLUB MEETING AT IRVINE WATER DISTRICT, TUESDAY, 2 AUGUST 2005.
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