

# ALL EARS

[www.earsclub.org](http://www.earsclub.org)

The official bulletin of the Escondido Amateur Radio Society – N6WB November 2012

## November's meeting details

November's meeting is a three-part affair, consisting of the President's review of 2012 & closing speech.

This will be followed by the election of the proposed slate of EARS club officers for 2013.

Finally, there will be a surprise presentation, the topic of which will be... Well, that would be telling wouldn't it?

**This is the most important meeting of the year, so we hope to see you all there!**

## EARS Event Calendar - 2012

- Nov 08 Regular Meeting, 7:30 p.m.
- Nov 15 Board Meeting, 7:00 p.m.
- Nov 17 Monthly Breakfast, 8:30 a.m.
- Nov 24 [VE Testing](#)
- Dec 08 Christmas Party, 4:00 p.m.
- Dec 13 Board Meeting, 7:00 p.m.
- Dec 15 Monthly Breakfast, 8:30 a.m.
- Dec 29 [VE Testing](#)

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## Welcome to November's ALL EARS

By Steve Venner, W6TAN



Hi everyone,

Once again, many thanks to all of you who submitted articles and photos for this edition... It was very much appreciated!

Specifically this month, my thanks go to Robert Kitson, Dick Kalkofen, Roger Gagos, and Fred McDavitt.

I look forward to receiving your articles and photos as always... The cut-off date for December's articles is Thursday, 6<sup>th</sup> of December.

On a different topic, I would like to briefly mention about e-mails which you may receive from:

[earsmail@earsclub.org](mailto:earsmail@earsclub.org)

The club officers occasionally use this functionality to send out informative e-mails to the membership (past and present), and to both the Yahoo! & Google news groups.

Normally, these e-mails contain contact information, and it is to this you should respond.

Some of you respond to the original e-mail (despite what it says in the message). There's no problem with you doing this, but do be aware that responses are not monitored, and any messages that you do send to this e-mail address are automatically deleted.

Also, some of you seem to think that if you send an e-mail to this address, it will be sent to the general members. Sorry – it doesn't work like that... It's for club officers' use only. I hope this explains why some of you never receive responses to your replies to [earsmail@earsclub.org](mailto:earsmail@earsclub.org)!

Until next month - 73,  
Steve, W6TAN.

## The Presidential Prose

By Robert Kitson, KI6SBL



Amateur radio is the first line of communication when emergencies hit.

This week we are reminded of this fact as the perfect storm

"Sandy" ravages the east coast.

Nets across America became opportunities for families to learn how things are going - who is safe - what was damaged. I am proud to be a very small part of the HAM experience.

On a local note, we extend a hearty thank you to Matt Tucker N6EAJ for getting EARS photos from the 1980s scanned and placed on the Internet for all to see.

You can click on the following links if you're interested in walking down EARS memory lane.

Album 1:

<https://skydrive.live.com/redir?resid=6F991E59259C06DB%21107&authkey=%21APBGpD1whLg5Aa4>

Album 2:

<https://skydrive.live.com/redir?resid=6F991E59259C06DB%21108&authkey=%21AGAHjSuH21UEa60>

Album 3:

<https://skydrive.live.com/redir?resid=6F991E59259C06DB%21109&authkey=%21ADFIQDsZGJf7PBk>

Next Tuesday Americans elect the next President of the United States, but wait there's more! EARS members get to continue their voting rights at the November EARS regular meeting.

That's right, this year two new Presidents will be elected, one president will get to rule the greatest union in the history of the world and the other will get to run the United States.

Please, every EARS member reading this article do all you can to be at the meeting as each vote counts. Besides, if you're not there you cannot object if someone nominates you for VP. ☺

73 for now,

Robert J. Kitson, KI6SBL

## We Did Good!

Information provided by John Musselman, N6EP

The 2012 ARRL Field-Day results are now available, and guess what?

**We did good!**

Filtering all stations from San Diego, N6SD came tops in 2A, and third in the San Diego Section...

#	Call	Score	Category	QSOs	Power Mult	GOTA Call	Section	Participants	Club
1	K6AM	12,564	2E	4,094	2		SDG	2	
2	W6NWX	12,082	5A	3,288	2	WD6FWE	SDG	71	Palomar ARC
3	N6SD	7,804	2A	2,134	2	N6WB	SDG	80	Escondido ARS
4	W6QAR	5,702	1A	1,309	2		SDG	9	Qualcomm ARC
5	W6UUS	3,648	3A	998	2		SDG	34	Convair / 220 ARC
6	K6OM	3,125	7A	726	2		SDG	15	South Bay ARS
7	W6BGS	2,962	5A	892	2		SDG	84	ARC of El Cajon

**Woohoo!**

For more details – see the ARRL website:

[http://www.arrl.org/results-database?fd\\_category=&fd\\_power=&fd\\_sect=SDG&ss\\_call=&sort0=&sort1=&sort2=&event\\_id=37444](http://www.arrl.org/results-database?fd_category=&fd_power=&fd_sect=SDG&ss_call=&sort0=&sort1=&sort2=&event_id=37444)

## Current EARS Membership

By Steve Venner, W6TAN



This past month, there were no new members joining, however, we did have a past member from 2010 re-join:

Steven Richards, KI6SBQ

**Welcome back Steve!**

Therefore, the current EARS membership as of 8<sup>th</sup> November, 2012 is:

- Life: 51
- Paid: 78
- Total: 129

## Officers Slated for 2013

Information provided by Robert Kitson, KI6SBL

By now you should have seen the e-mail which Robert sent a while ago regarding the proposed slate of EARS officers for 2013.

For those of you who didn't get the e-mail, here they are in all their glory:

### EARS Club Officers for 2013:



#### President

Fred McDavitt, W6PBR  
(760) 737-6837  
[mcdavitt\\_fred@cox.net](mailto:mcdavitt_fred@cox.net)



#### Vice President

Vacant



#### Secretary

Michael Hightower, KF6SJ  
(858) 613-9240  
[mike@hightower.com](mailto:mike@hightower.com)



#### Treasurer

Teri Bloom, W6TRB  
[w6trb@earsclub.org](mailto:w6trb@earsclub.org)



#### Emergency Services Coordinator

John McNelly, AF6UA  
(858) 449-3326  
[ears@mcnelly.org](mailto:ears@mcnelly.org)

As can be seen above, we currently have a vacancy for the Vice President's position.

**If you think you have what it takes to fulfill this vital role, please contact Robert Kitson, KI6SBL, or John Musselman, N6EP.**

**They are awaiting your call!**

On a similar topic, beginning next year, EARS will also require two members who can represent the club at the monthly SANDARC meetings.

Again, please contact Robert Kitson for more details.

### Members at large:



Jo Ashley, KB6NMK  
(760) 741-2560  
[kb6nmk@amsat.org](mailto:kb6nmk@amsat.org)



Marvin Munster, W6MJM  
(760) 747-2223  
[w6mjm@amsat.org](mailto:w6mjm@amsat.org)  
+ *Property Manager*



Dirk Reschly, N6SUN  
(760) 743-5839  
[n6sun@earsclub.org](mailto:n6sun@earsclub.org)



John Belstner, W9EN  
[w9en@arrl.net](mailto:w9en@arrl.net)



Bruce Woods, KI6YFH  
(760) 215-4582  
[bewoods75@yahoo.com](mailto:bewoods75@yahoo.com)

### Non elective:



#### Past President

Robert Kitson, KI6SBL  
(760) 715-2876  
[ki6sbl@earsclub.org](mailto:ki6sbl@earsclub.org)



#### Historian

Harry A. Hodges, W6YOO  
(760) 743-4212  
[w6yoo@cox.net](mailto:w6yoo@cox.net)



#### Webmaster and Newsletter Editor

Steve Venner, W6TAN  
+44 1895 636099  
[w6tan@earsclub.org](mailto:w6tan@earsclub.org)

## Christmas is a-coming (reprise)

By John Belstner, W9EN



Would you believe I saw  
Christmas stuff in the mall the  
other day?

It's not even Halloween!

Well, this made me think about the annual EARS Christmas party and how the last few years it's been one of the few opportunities for me to catch up with many of the members in the club.

Continuing in the tradition, this year's EARS Christmas party will be held on Saturday, December 8<sup>th</sup> at the QTH of John—W9EN.

A special door prize will be awarded to the 1st brave soul to jump in the swimming pool.

**Mark your calendars now so you don't forget!**

[Ed: Confirmation - the EARS Christmas party will be held on Saturday 8<sup>th</sup> of December after the Escondido Christmas parade as normal.]

## Escondido Christmas Parade

By Bruce Woods, KI6YFH



Hi everybody,

It is that time again for sign-ups  
for the Escondido Christmas  
Parade on Saturday, December  
the 8<sup>th</sup>.

The time is from 7:00am to about 12:00 p.m.

Everybody did a great job last year and I am asking you if you would volunteer again this year as I need wonderful people like you to step up to the plate.

Please give me a call and let me know.

Bruce Woods, KI6YFH  
(760) 215-4582

## EARS Elmer List

By Steve Venner, W6TAN



Here is the current list of those  
kind soles who have  
volunteered their Elmer  
services:

### 1. Harry Hodges, W6YOO

- *Award programs such as WAC, WAS, DXCC, VUCC, IOTA, etc. to include card checking.*

### 2. Dick Kalkofen, K6KAL

- *Software development and hardware interfacing.*
- *Radio to PC communications.*
- *Logging Software: WinTest, Writelog, DX4Win, N1MM, Ham Radio Deluxe and many others.*
- *Digital mode software, link FLdigi, MMTTY for PSK, RTTY, WISPR, JT65 etc.*
- *Kit building (WinKeyer USB, FA-SM CW/Voice Keyer, Idiom Press Voice Keyer.*
- *Antenna setup and tuning.*

### 3. Matt Tucker, N6EAJ

- *General electronics (analog), power supplies, audio, batteries.*
- *PSK31 and similar digital modes.*
- *Operating and setting up the computer/radio interfaces.*
- *Basic antennas (VHF for home or car), HF dipoles and multi-band doublets / antenna tuners.*

### 4. Mike Hightower, KF6SJ

- *HF and in particular, digital modes of PSK31 and JT65.*

### 5. John Musselman, N6EP

- *HF, electronics, contesting, "other"...*

### 6. Marvin Munster, W6MJM

- *Emergency Power Sources, Batteries, Solar, etc.*
- *DC Cables and Hook-Up*
- *Coax Cables and Connector Assembly*
- *DC Power Distribution*



## Vintage Amateur Radio – Pt 2

By Roger Gagos, K6EQ



**“What else can I do with this hobby?”**

### Review

Last month we looked at the foundation years of amateur radio including the formation of the Federal Radio Commission and its living successor, the Federal Communications Commission.

We owe a debt of gratitude to the pioneers like Lee DeForest, Guglielmo Marconi, and countless “hams” who proved that wireless communications were not only possible, but quite beneficial for both entertainment and the common good.

Following those pioneers development and advancement moved the equipment out of the home-made category to a wide range of factory constructed gear.

A lot of this gear is still on the air and working well, although it usually requires some amount of TLC to clean off the accumulated dirt and replace components that have long ago failed, or at least will fail when power is applied!

### Post-War Era Continued

As we mentioned, after World War II many of the technologies and companies that grew during the war continued with both military and amateur radio product design.

By the 1950’s a ham could spend hours perusing catalogs full of Collins, Hallicrafters, Hammarlund, E.F. Johnson, Gonset, National Radio, and others. During that time, transmitters and receivers were separate pieces of equipment, so one could easily mix manufacturers and have a nice station.

It usually required some sort of antenna switching arrangement and receiver muting function; the latter is found in almost every receiver of those years.

Another common design approach was the required use of an external speaker. Some of them are quite large and elaborate. By the way, if you try out a

vintage receiver, don’t expect to hear anything without a separate speaker (or a set of headphones plugged in) and usually a jumper across a set of screw terminals or connector labeled (or not) “Mute.”

As long as I’m offering some technical tips for the newer ham, ALWAYS remember that these old rigs can be dangerous if you aren’t careful to avoid high-voltage power supplies and connections (some are on the “Mute” terminals) and simply turning it off and even unplugging before you stick your fingers inside could bring nasty surprises.

Power supply filter capacitors hold their high-voltage charge until the “bleeder” resistors discharge them; but what if those same resistors are open or just missing from a former “golden screwdriver” modification?

*Ouch...or worse!*

I always try to short the filter capacitor positive lead to the chassis with a plastic-handled screwdriver, just to be sure.

Another surprise can come from the plugged-in AC line cord that often has RF bypass capacitors to ground. When these get leaky, you have a good chance of significant AC voltages between the chassis and a real ground, such as your antenna coax shield.

### U.S. Commercial brands – Decades of great gear!

Throughout the 1950’s, **Hallicrafters**, headquartered in Chicago, was a dominating company in the receiver world.



They made transmitters too, but many a ham got their start with one of the S-38 series which was upgraded regularly through S-38E.

They are basic five or six-tube general coverage receivers that were relatively inexpensive and easy to operate although performance is pretty minimal.

The higher-grade receivers (model numbers beginning with "SX") incorporated crystal filters for excellent selectivity and up to two RF amplifier stages<sup>1</sup>. As was previously stated - Hallicrafters also made transmitters at that time, known for their heavy-duty construction<sup>2</sup>.

From Malden, Massachusetts came the **National Radio Company** who actually started as the National Toy Company!

They also had a complete line of receivers. The top-end model numbers began with "HRO" and featured a unique main tuning dial with windowed numbers that changed over the 360-degree rotation so that a tremendous amount of tuning range is available through its vernier drive.

The 85-pound HRO-50 and HRO-60 used plug-in coil boxes to select amateur and general shortwave ranges<sup>3</sup>. These are still prized receivers today. I'm not aware of any National transmitters.

**E.F. Johnson** produced a whole line of transmitters (and no receivers), most of which were available in kit form.



If you find a factory-built Johnson transmitter you can expect, for the most part, higher-quality assembly. These can be identified by the riveted-in tube sockets. I've seen some real disasters in the kit-built versions!

Speaking of kits, no discussion of Vintage Ham Radio would be complete without mentioning the **Heath Company**.



The foundation of the company goes all the way back to 1912 with kit airplanes. Sadly, the founder was killed in a test flight in 1931.

Howard Anthony purchased the company and, with the wide availability of war surplus electronic components after World War II, began producing electronic kits.

They went on to produce a wide range of test equipment, amateur radio gear, Hi-Fi/stereo and television sets<sup>4</sup>. There is a huge inventory of Heathkit amateur equipment still in service.

Another very successful kit company was **World Radio Laboratories**, founded by Leo Myerson. They specialized in low-cost circuit designs, yet their equipment, if properly assembled, is very rugged. Later, they began producing assembled units as the complexity of single-sideband transceivers did not lend itself to beginner construction<sup>5</sup>.

In the decades of the Sixties and Seventies, equipment began to morph from separates to combined transmitter/receivers: the transceiver.

The first commercial ones were the **Collins KWM-1** (20-10M only), followed soon by the KWM-2, an 80-10M model with terrific aesthetics<sup>6</sup>. It is said Arthur Collins wanted to appeal to the wives of the mostly-male ham radio community. He had to help justify the high prices of the top-line equipment!

The R.L. **Drake** Company of Miamisburg, Ohio made an excellent series of single-sideband equipment, starting with the Model 1A receiver and progressing through the TR-7 SSB rig.



Drake showed that equipment for SSB could be produced at reasonable prices and high quality. Their transceivers and separates still hold their own in the face of more modern gear<sup>7</sup>.

In the late Sixties, no doubt spurred by a local population with the highest percentage of radio amateurs in the population of any country, ham radio equipment began to be manufactured in Japan and exported worldwide.

The leading companies were Inoue Communications Equipments (sic) (later Icom), Trio (later, Kenwood), and Yaesu Musen (well, you know...).

Quickly producing lower-priced equipment for the booming 2-meter FM/repeater craze, they soon developed of hybrid (tube/transistor) HF transceivers and later, some of the first completely solid-state radios.

In addition, their high-volume manufacturing skills, honed in the consumer electronics business, were seriously eroding the classic American-made company market share.

Eventually, it spelled the end for most of the companies we have mentioned.

## Conclusion

As stated in Part I, vintage ham radio is a huge subject. I hope I've stimulated your interest and you will do more reading on the subject.

There are, of course, many pictures, and YouTube is full of videos of old ham gear being proudly

operated. Sometimes this is part of a selling effort, but often, just for the pride of it.

Search YouTube for "California Hammin" for some great shack tours captured by K6GLH!

## References:

- 1) <http://www.radioing.com/museum/rx3.html>
- 2) <http://www.radioing.com/museum/tx2.html>
- 3) <http://www.radioblvd.com/National%20HRO.htm>
- 4) <http://heathkit-museum.com/hvmhistory.shtml>
- 5) <http://w5ami.net/wrl>
- 6) <http://www.wb4hfn.com/COLLINS/Documents/Brochures/S-Line/Brochure-S-Line.htm>
- 7) <http://www.wb4hfn.com/DRAKE/DrakePictureGallery.htm>

## Opportunity Drawing Update

By Teri Bloom, W6TRB



The next item for the opportunity drawing is a Yaesu VX-7R, with a MH-57A4B microphone and a FBA-23 Battery case.

All the items are in new condition, and were a donation to the club.

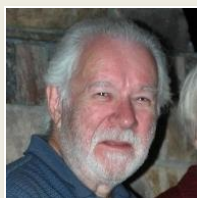
Tickets will be on sale as normal at November's meeting.





## PC Tip No.2

By Dick Kalkofen, K6KAL



### Phantom ports

*Some of the following info was gleaned from the N1MM on-line documentation.*

Many users of USB to serial adapters may have noticed relatively high port numbers being assigned and some if not most of the lower COM ports are all committed to other things.

It has been found that this strange behavior is in fact 'relics of the past'.

As an example, COM3 used to be the standard port for built-in modems, and even though those modems have largely gone the way of the dinosaur, many computers still show COM3 as committed to that use.

If you are familiar with the use of Device Manager, you can always set up several hardware profiles, including one for ham radio that deletes the devices that are getting in your way (printers and so on).

That way, you are only a reboot away from being ready to go for radio or being back in everyday mode.

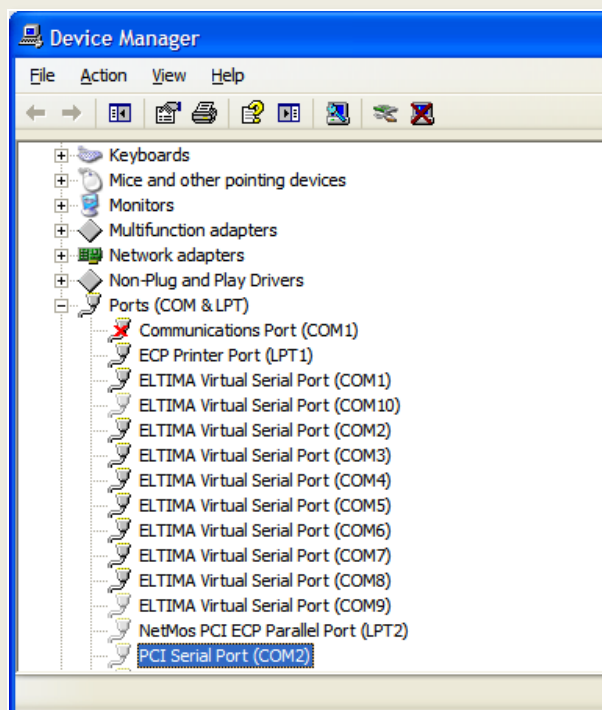
Sometimes, though, ports will not seem to be committed, but when you try to create virtual serial ports (with a USB-to-serial adapter and Bluetooth adapters for example) Windows will inexplicably skip some lower number ports, or complain that they are 'In Use'.

Often there are ports assigned which no longer have devices connected to them. These are called "phantom ports". These can be discovered and removed. It may then be possible to move ports around to accommodate the individual needs of the program(s).

Here is how to have Device Manager display any "phantom" ports -WIN 7 (Most of these steps are similar in Win Vista and Win XP).

1. Click Windows 'Start' Icon
2. Click Control Panel
3. From Control Panel, Select 'Device Manager'
4. When the device manager opens, click the 'View' menu
5. Click 'Show Hidden Devices'. You may see lots of other devices, but we are looking for just the serial ports here.
6. Click on the + sign next to the Ports to see the full list of Com ports being used
7. Highlight the port you wish to delete and then press delete
8. Accept when asked to do so and continue with any more that you wish to delete.

Here's what the Device Manager may look like before you delete the phantom ports.



In this example, a 'Micro Ham' router or other 'Virtual Serial Port' emulator was loaded, which accounts for all the ports with the similar description.



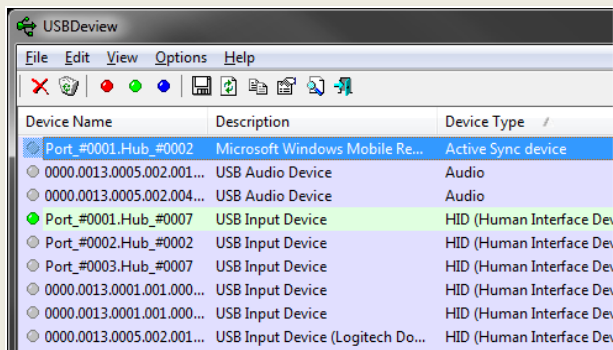
And this is an example of another serial port emulator.



If you want, you can right-click on any of the shaded ports and examine their properties. Each one that is inactive will show up as a "device no longer connected to this computer."

If you are unsure as to whether the driver is in use don't worry - if windows needed them, it will reinstall the driver.

There is a 'Freeware' utility called USBDeview available at 'nirsoft.net' that is very slick.



To see the unused or old drivers, select Options, and check 'Display Disconnected Devices'.

As you can see in the example the 'green' line is the only device connected, the grey lines are those that are not.

My first use of this utility produced a list of over 145 devices that at some time in the past were plugged

in. In many cases they were the same device plugged into different hubs. If you scroll the window to the right you can see the 'Last Plug/Unplug Date'. You may be surprised as to how long ago this device was last used.

Pretty neat – huh?

Well how does Microsoft keep track of these devices?

For each device driver that is loaded on a USB hub / port, some data about each device (as you can see from the column headings in the utility) are kept, which allow MS operating systems to load or re-load the drivers as needed.

But old or unused drivers just take up space, and when a device is plugged in, the operating system must scan this growing list of devices to find what it thinks is a compatible driver.

Right clicking on a line will bring up a menu that will allow you to select 'Uninstall Selected Device', effectively removing the unused driver.

There you have it...

Cleaning up old Phantom ports has led us to cleaning up old USB drivers.

While this is not a big game changer as far as performance, it will allow for improved USB device load / unload, as the pool of drivers would be smaller, saving time.

As an aside, this utility also shows the power consumption of each USB device, driver version and many other interesting facts.

Remember each port is limited to 100 ma, and a fully loaded hub could be shut down by the operating system if the ratings are exceeded.

Then you would need to purchase a 'powered' hub to give your system the extra power it may need.

## Emergency Services Update

By Fred McDavitt, W6PBR



### Lessons learned from Sandy.

Even with five days of advanced notice, few citizens in the NT/NJ/CT area prepared themselves for the aftermath

of the storm:

- At the three day mark, the rush for flash lights, batteries, portable radios, water and comfort food started.
- Few thought to fill up their car's gas tanks, but a good number went to Home Depot and purchased portable generators **sans** an extra gas tank with gas.
- Two days after the storm, opportunists from unaffected states came into the damaged area with truck loads of five gallon gas tanks filled with gas which they initially sold for \$50, but as demand increased so did their price.
- Most of the families interviewed had a two day supply of food, nothing for emergencies and no cash to buy food that they did find.

*Okay, okay. Enough is enough. There is no reason to beat a dead horse except for the sheer joy of it.*

When the "BIG ONE" hits San Diego County we won't have the luxury of five days advanced notice, it will be a "come as you are" event.

If you don't have emergency food, water and sanitary supplies, you are going to be part of the problem and not part of the solution.

Hopefully you will have a solar system for your shack in addition to an emergency generator with gas for several days' service.

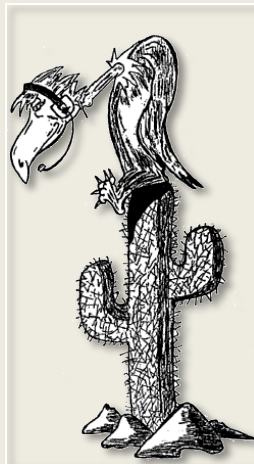
**AND**, because you stay prepared and fill your car's gas tank when it reaches the half full mark, you will always have enough gas to get to your ARES, RACES or CERT assignment when activated.

Being prepared is not something you can do after the fact. Actually, it's a way of life.

Fred - W6PBR

## Yuma Hamfest

Information provided by Marvin Munster, W6MJM



This is just a reminder that the 2013 ARRL Arizona State Convention will be held early in the year, in conjunction with the Yuma Hamfest on February 15-16, 2013 in Yuma, Arizona.

For those not familiar with the Yuma Hamfest, it is one of the largest hamfests held in the ARRL's SW Division, and

now in our ninth year, is the only multi-day convention-style Hamfest held in Arizona.

Located in the very southwest corner of Arizona, Yuma is less than a three-hour drive from both Phoenix and San Diego, the fifth and eighth largest cities in the U.S. respectively, and we attract hundreds of additional visitors from both metro areas.

We feature vendors, tailgating, RV camping on site, seminars held in parallel tracks in two separate buildings, amateur license testing, DXCC card checking, the famous Buzzard BBQ dinner, an antenna clinic and transmitter hunt, a huge grand prize drawing, hourly door prizes, a hospitality area, the "Country Store" consignment sales area, and much more.

Our use of a fairgrounds venue allows us to control costs for both vendors and attendees. We feature \$5 admission, \$50 vendor spaces, and a \$10 catered dinner.

The 2012 event was marketed by large print ads in the January and February issues of QST and CQ, direct marketing to other clubs, etc, and 1,171 people attended.

We anticipate similar marketing and attendance for 2013. The upcoming convention is four months away, and some of the vendor spaces are already taken. So if you are considering participating as a vendor, you should register soon if you have not already done so.

Please check our website at [www.yumahamfest.org](http://www.yumahamfest.org) for more information.

We have several new options for those staying in a motel, so check out that page on the website.

You can contact me by email at [info@yumahamfest.org](mailto:info@yumahamfest.org) or by phone at 928-305-1034 if you have any questions.

If you have a seminar that you would like to present, please contact us about that as well.

Roger Hunt (K7MEX)  
Director, Yuma Hamfest  
2013 Arizona State Convention

## Palomar Operating Day

By Robert Kitson, KI6SBL



Hi All,

EARS has been invited to have a booth at the PARC Operating Day.

Is there anyone out there interested in helping us out on this?

Here are the details:

OPERATING DAY  
Sunday, November 18, 2012

FRY'S ELECTRONICS  
150 South Bent Street  
SAN MARCOS, CALIFORNIA 92069  
9:30 AM to 5:30 PM

HOSTED BY PALOMAR AMATEUR RADIO CLUB  
[www.palomararc.org](http://www.palomararc.org)

Come operate on the ham bands at FRY'S:  
70cm, 2m, 6m, 10m, 15m, 20m

Contact Dennis KD6TUJ for more details:  
(760) 672-0223

Alternatively, if you're interested please call me with your ideas:  
(760) 715-2876  
[KI6SBL@earsclub.org](mailto:KI6SBL@earsclub.org)

## Technical Challenge

By Steve Venner, W6TAN



This month's technical challenge is to do with Signal-to-noise ratios

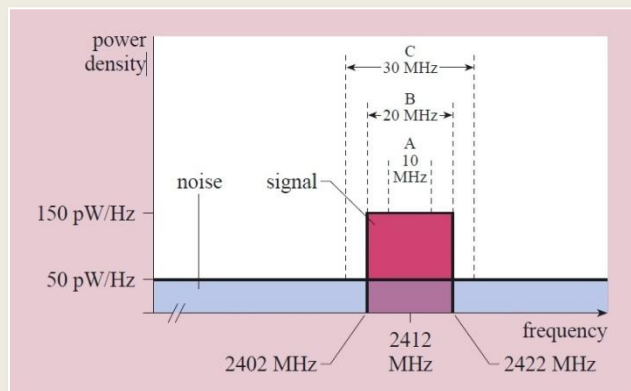
This is one parameter which is sometimes given when specifying the sensitivity of

receivers.

The signal-to-noise ratio is defined as the power ratio between a signal (the meaningful information) and the background noise (the unwanted signal)

The signal-to-noise ratio is found by dividing the signal power by the noise power. The larger the number the better, because that indicates that the signal power is greater relative to the noise power.

The following figure shows the transmitted signal power spectrum in a particular region of space. It also shows the noise power spectrum.



### The problem:

There are three receivers, A, B and C, each of which has a different passband width. Your task is to find the signal-to-noise ratio at each of these receivers. To help you on your way, I'll give you an example:

Receiver A operates with a passband of 10 MHz centered on the channel frequency, so the signal power is:

$$150 \text{ pW/Hz} \times 10 \text{ MHz} = 150 \times 10^{-5} \text{ W} = 1.5 \text{ mW}$$

The noise power is:

$$50 \text{ pW/Hz} \times 10 \text{ MHz} = 50 \times 10^{-5} \text{ W} = 0.5 \text{ mW}$$

Hence the signal-to-noise ratio is:

$$1.5 \text{ mW} \div 0.5 \text{ mW} = 3.$$

### The problem restated:

Calculate the signal-to-noise ratios for the other two receivers B and C, and hence state which of A, B and C has the best signal-to-noise ratio.

Also, state the signal-to-noise ratios in dB for all three receivers.

### The answers:

For receiver B, which has a passband of 20 MHz – the signal power is:

$$150 \text{ pW/Hz} \times 20 \text{ MHz} = 150 \times 20^{-5} \text{ W} = 3 \text{ mW}$$

The noise power is:

$$50 \text{ pW/Hz} \times 20 \text{ MHz} = 50 \times 10^{-5} \text{ W} = 1 \text{ mW}$$

Hence the signal-to-noise ratio is:

$$3 \text{ mW} \div 1 \text{ mW} = 3.$$

This is the same figure as for receiver A. The answer is the same because, in this case, increasing the passband has increased the signal power and the noise power at the receiver in exactly the same proportion.

For receiver C, the passband is 30 MHz wide, but the signal spectrum occupies only 20 MHz of this. Hence the signal power is exactly as for receiver B: 3 mW.

The noise power spectrum, however, extends across the full 30 MHz, so the noise power is:

$$50 \text{ pW/Hz} \times 30 \text{ MHz} = 50 \times 10^{-5} \text{ W} = 1.5 \text{ mW}$$

Hence the signal-to-noise ratio is:

$$3 \text{ mW} \div 1.5 \text{ mW} = 2.$$

Therefore, receivers A and B equally have the best signal-to-noise ratio of 3:1.

Finally, the signal-to-noise ratio in dB for each of the receivers is given by:

$$S/N \text{ in dB} = 10 \log_{10} (S/N \text{ linear})$$

So:

$$\text{Receiver A} = 10 \log_{10} (3) = 4.8 \text{ dB}$$

$$\text{Receiver B} = 10 \log_{10} (3) = 4.8 \text{ dB}$$

$$\text{Receiver C} = 10 \log_{10} (2) = 3 \text{ dB}$$

That's it for this month – I hope you found it interesting. Next month – another challenge!

73,  
Steve, W6TAN



## General Information

### EARS Club Officers for 2012:



**President**  
Robert Kitson, KI6SBL  
(760) 715-2876  
[ki6sbl@earsclub.org](mailto:ki6sbl@earsclub.org)



**Vice President**  
John Belstner, W9EN  
[w9en@arrl.net](mailto:w9en@arrl.net)



**Secretary**  
Vince Sheetz, W6CD  
[w6cd@earsclub.org](mailto:w6cd@earsclub.org)



**Treasurer**  
Teri Bloom, W6TRB  
[w6trb@earsclub.org](mailto:w6trb@earsclub.org)



**Emergency Services Coordinator**  
Fred McDavitt, W6PBR  
(760) 737-6837  
[mcdavitt\\_fred@cox.net](mailto:mcdavitt_fred@cox.net)

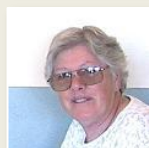
### Officers at Large:



Jeff Murdock, AE6GM  
(760) 730-3657  
[cozy765@pacbell.net](mailto:cozy765@pacbell.net)



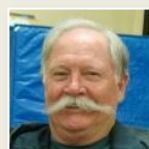
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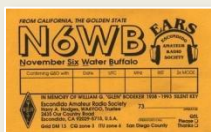


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+ *Property Manager*

### About ALL EARS:



**ALL EARS** is the official bulletin of the Escondido Amateur Radio Society.

An e-mail subscription to **ALL EARS** is FREE!

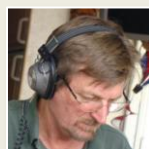
You don't need to be a member. Just drop a note to:

[allears@earsclub.org](mailto:allears@earsclub.org)

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**Note:** The deadline to submit material for the bulletin is by the 1<sup>st</sup> Thursday of the month.

### Non-elective:



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+44 1895 636099  
[w6tan@earsclub.org](mailto:w6tan@earsclub.org)

## General Information cont'd

### SUNDAY EVENING NET

EARS Sunday evening net is every Sunday at 8 p.m. local time. You can get the latest information on club activities there.

Just tune in to the club's 2m repeater at 146.88 MHz, negative offset and PL of 107.2, check in and say "Hi!".

### SECTION NEWS

The latest happenings around San Diego are available at the official website of the ARRL San Diego Section:

<http://www.arrl.org/Groups/view/san-diego>

### EARS PINS

EARS 2010 Board had EARS lapel pins made. They are yellow 1" circles with the EARS Logo in the middle.

They are only \$5.00 each, so get yours today by contacting: Robert Kitson; [ki6sbl@earsclub.org](mailto:ki6sbl@earsclub.org)

### AMATEUR RADIO LICENSE RENEWALS AND CHANGE OF ADDRESS

To renew your license or supply the FCC with a change of address, use NCVEC Form 605 (obtainable from Harry, W6YOO).

Attach a photocopy of your license and mail to:

SANDARC VEC,  
5511 Maryland Drive,  
La Mesa,  
CA 91942-1519.

Note: You **MUST** include your FRN Number.

There is no charge for this service.

### HAM RADIO LICENSE PLATES

All California hams may receive their call sign on their license plate.

Use DMV Form REG17A. The cost is \$21.00 and is a one-time fee.

### VE TESTING

A SANDARC Volunteer Examiner team administers license examinations on the last Saturday of each month at 9:00 a.m. at:

The LDS Church,  
1917 East Washington Avenue,  
Escondido,  
CA 92025.

Contact Harry, W6YOO, at (760) 743-4212 or [w6yoo@amsat.org](mailto:w6yoo@amsat.org) to schedule an appointment.

### SANDARC

"EARS" is a member of the San Diego Amateur Radio Council, an association of San Diego area Amateur Radio clubs.

Among other things, SANDARC runs the local Volunteer Examiner program (SANDARC-VEC), and manages the ARRL southwestern Division Convention when held in San Diego every fourth year. See [www.sandarc.net](http://www.sandarc.net)

### CLUB REPEATERS

"EARS" operates three repeaters in the Escondido area.

- 146.88 MHz, minus offset, PL 107.2
- 224.14 MHz (AE6GM repeater), minus offset, PL 156.7
- 449.24 MHz, minus offset, PL 127.3

The 2m and 70cm repeaters are local in nature and primarily serve the immediate Escondido area.

### ECHOLINK

The 2m repeater is tied to the EchoLink system as node 2846.

See the Club website, [www.earsclub.org](http://www.earsclub.org) for information on EchoLink.

There is also a listing of local EchoLink codes in the members section of the website.

## General Information cont'd

### EARS WEB PAGE

"EARS" is on the Internet!

You can read about upcoming activities, get links to other ham radio sites, read back issues of All Ears, or update your call or address.

The site is updated regularly. Check it out at

[www.earsclub.org](http://www.earsclub.org)

### EARS REFLECTOR

These are free services that keep members up-to-date via e-mail.

To subscribe to either one of the reflectors, go to the EARS website and click on the Yahoo or Google Group links at the bottom of the main page.

### CHANGE OF ADDRESS OR CALLSIGN

Please let us know if you change your address, call-sign, telephone, license class, e-mail, etc.

We want to keep our records up to date, so please contact any club officer with the updated information.

### CLUB BADGES

Let everyone know that you are a member of EARS, and avoid having them guess what your name is.

Get your Club Badge from:

Glaser Bailey,  
2015 S. Escondido Blvd,  
Escondido,  
CA 92027  
(760) 743-5551

### MONTHLY BREAKFAST

EARS members meet socially the third Saturday of each month at 08:30, at:

Due to the fire at Spires, until further notice, EARS breakfast will be at the old venue:

Westside Cafe,  
9th and Redwood.

### ARRL LETTER

The ARRL Letter, a weekly e-mailing of Amateur Radio related news, is available to ARRL members free of charge directly from ARRL HQ.

To subscribe for e-mail delivery, ARRL members first must register on the Members Only Website, [www.arrl.org/members](http://www.arrl.org/members).

The ARRL Letter is also available to all, free of charge, at [www.arrl.org/arrlletter](http://www.arrl.org/arrlletter) where it is posted each Friday after it is distributed via e-mail.

### EARS HATS, SHIRTS AND JACKETS

Hats, shirts and jackets are available with the EARS logo.

Order them directly from:

Print World,  
107 S. Andreasen Dr.,  
Escondido,  
CA. 92029  
(760) 747-6443

Just let them know you are a member of EARS.

## Emergency Services

### MONTHLY ARES® MEETING

The San Diego section ARES® meets on the second Saturday of each month at 8:00 a.m. at:

Scripps Memorial Hospital,  
Nobel Room,  
Schaetzel Building,  
9890 Genesee Ave,  
La Jolla,  
CA 92037.

Parking is available in the first lot to the right after the guard shack. The parking fee is \$4.00 and is antenna friendly.

If interested, go to [www.sdgares.net](http://www.sdgares.net) or contact Steve Early, Section Manager, (619) 461-2818, or via e-mail at [ad6vi@arrl.org](mailto:ad6vi@arrl.org).

### EMERGENCY SERVICE NETS

#### Amateur Radio Emergency Service (ARES) San Diego

Sunday, 08:30 146.730 (-) 107.2

#### Community Emergency Response Team (CERT) Escondido

Tuesday, 19:00 146.880 (-) 107.2

Followed by 146.445 SIMPLEX, as directed

#### Community Emergency Response Team (CERT) North County and Back Country

Wednesday, 19:00 147.030 (+) 103.5

Followed by 146.445 SIMPLEX, as directed (on 2<sup>nd</sup> & 4<sup>th</sup> Wednesdays)

#### Radio Amateur Civil Emergency Services (RACES) San Diego County

Monday, 7:30 PM 147.195 (+) 114.8



# Escondido Amateur Radio Society

## Membership Application and Renewal Form

\*Call \_\_\_\_\_

\*Last Name \_\_\_\_\_

\*First Name \_\_\_\_\_

\*Street Address \_\_\_\_\_

\*City \_\_\_\_\_ \*State \_\_\_\_\_ \*Zip \_\_\_\_\_

Home Phone \_\_\_\_\_

Cell Phone \_\_\_\_\_

\*Email \_\_\_\_\_

License Expires \_\_\_\_\_

EARS Family Members \_\_\_\_\_

License Class \_\_\_\_\_

First Licensed \_\_\_\_\_

Old Calls \_\_\_\_\_

Date of Birth \_\_\_\_\_

ARRL Member (Y/N) \_\_\_\_\_ Life Member (Y/N) \_\_\_\_\_

Amateur Related Interests \_\_\_\_\_

*ARRL, RACES, ARES, SATERN, Red Flag, HF, VHF, UHF, Packet, EchoLink, D-Star, T-Hunt, ATV, Field - Day, Contests, Antenna Design, Equipment Building*

Are you willing to run for a club office (Y/N)? \_\_\_\_\_

Note: Fields marked with a (\*) are required.

A Telephone number is requested, but may be unlisted in the roster if you prefer.

### Membership Rates:

One year ..... \$15.00  
 Family membership ..... \$4.00  
 Lifetime membership ..... \$150.00  
 Lifetime membership (family) ..... \$38.00

Mail this form with payment to:

EARS,  
 PO Box 3243,  
 Escondido,  
 CA 92033,

Or give it to the treasurer or any other club officer at a regular club meeting.

Checks please, it is safer than cash, and you have a record!

Membership is from January 1 to December 31.

After July 1, membership to the end of the year is ½ the annual fee.

Special rates apply for family membership for each additional licensed amateur radio operator in your immediate family and for lifetime membership.

For membership confirmation, include a self addressed stamped envelope with this form.