THE COMPASS

Official Newsletter of the Great South Bay Amateur Radio Club

April 2015 | Volume 43 | Issue #4

Upcoming Club Events

Next General Meeting:

Thursday, April 30th, 8 PM at the EOC

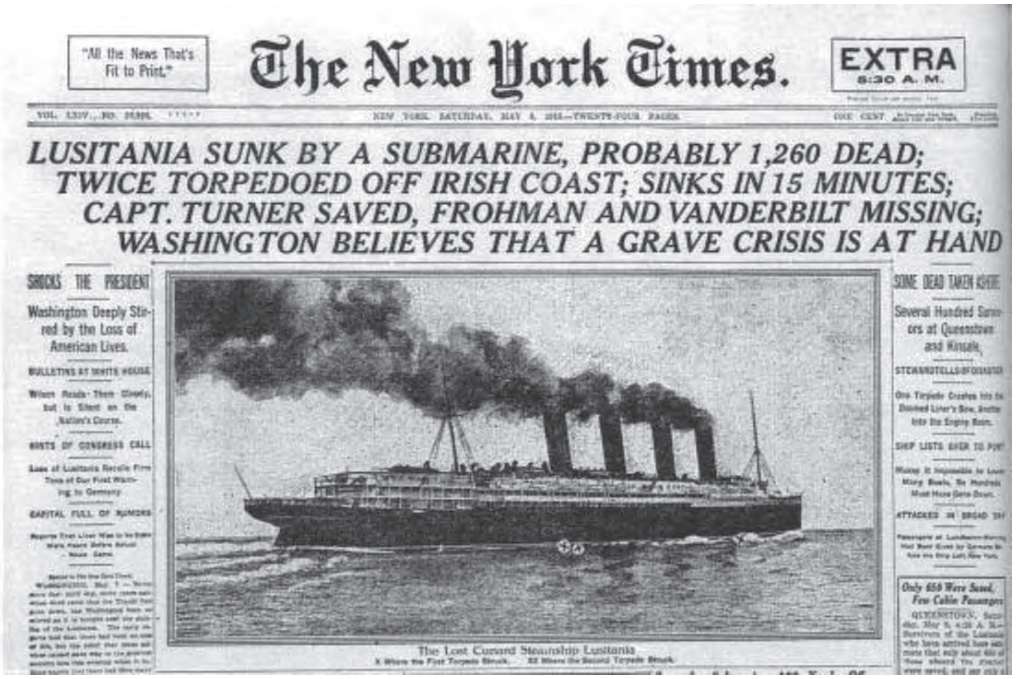
Our First Upcoming Special Events for 2015:

MS Walk @ Belmont State Park May 3rd.

Air Power Museum Republic Airport, Farmingdale, NY May 16th & 17th

GSBARC's FREE license classes are on Tuesday evenings from 7:30 to 9:30 PM. The Amateur Extra Classes are currently running.

Visit us on Facebook at www.facebook.com/gsbarc



"All the News That's Fit to Print."

The New York Times.

EXTRA 8:30 A. M.

LUSITANIA SUNK BY A SUBMARINE, PROBABLY 1,260 DEAD; TWICE TORPEDOED OFF IRISH COAST; SINKS IN 15 MINUTES; CAPT. TURNER SAVED, FROHMAN AND VANDERBILT MISSING; WASHINGTON BELIEVES THAT A GRAVE CRISIS IS AT HAND

SHOCKS THE PRESIDENT

Washington Deeply Stirred by the Loss of American Lives.

BULLETINS AT WHITE HOUSE

HOSTS OF CONGRESS CALL

CAPITAL FULL OF RUMORS

SOME DEAD TAKEN ASHORE

Several Hundred Survivors at Queenstown and Kinsale.

STEAMBOTELLS OF DISASTER

SHIP LISTS OVER TO PORT

ATTACKED IN BROAD DAY

Only 650 Were Saved, Few Cabin Passengers

The Lost Cunard Steamship Lusitania

Special Event: N2L May 1st to 15th

Amateur Stations in the NLI Section can sign up to operate as an N2L station at http://www.gsbarc.org/N2L.htm.

See page 5 for more information.

Inside this issue of The Compass...

Upcoming Special Events

MS Walk @ Belmont State Park
May 3rd

Air Power Museum
May 16th & 17th

Field Day
June 27th & 28th

Maggie Fisher Cross Bay Swim
July 17th

Fire Island Lighthouse
August 15th & 16th

Babylon Village Fair
September 13th

Hope for the Warriors Run
November 7th (Sat)

President's Message

As I sit here writing this month's president message it's 28 degrees outside—what the heck?! I hope this colder weather starts to warm up as I am sure everyone has some antenna work to do as well as other outside projects.

I hope a lot of you got to work the CQ World-Wide WPX SSB contest. I saw K2TZY's *Transworld* antenna on the front lawn again. He reported that it worked great.

Projects are always around and I am happy to say that at the open house on the 28th of March K2TV and I got the *Ameritron* AL80 B amplifier up and running on our club station, the *ICOM 756Pro2* is currently hooked up to the amp. *Please note: if you have never used an amplifier K2TV and I will be happy to guide you through the procedure for operating it. There are also directions posted by the amplifier. Be sure you follow the directions carefully so as not to cause any damage. Please ask for assistance if you are not sure about something.*

Next month we are going to very busy with on the air events, starting on May 1st with the ***N2L*** special event, visit the club's website to see more information about the event. The modes will be CW and SSB. If you would like to operate as an N2L station, please register for the times you'd like to operate. We will be operating as N2L from May 1st through 15th. May 16 and 17th is the *American Airpower Museum* special event station: antenna setup will be on Friday the 15th.

W2GSB's Airpower station will be on the air by 10 a.m. and operate during the museum's hours of operation. The *GSBARC QSO Challenge* will also begin on the 16th as well. For all the details of that event please go to the club website www.gsbarc.org. We will also be starting our official field day work parties to get everything ready in time for field day weekend June 27th and 28th. I hope to see a good turnout for the work parties as we need to get a lot done: the tower trailer cables need replacing and we need to bring the club trailer up to the north side of the field so that Ed, KD2ADC, can tune the antennas. We will also be cleaning out the club trailer and be doing some routine maintenance. So on Saturdays give a listen on our 2 meter repeater and if you hear us going down to work on field day equipment please lend a hand if you can. Get involved early so that when field day rolls around you will have a good understanding on what everything is and how it works.

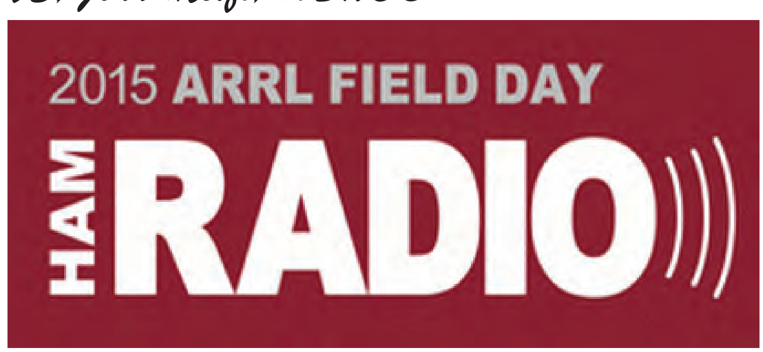
As you know every year we hold a fundraising raffle to help with expenses. We all like to see new equipment around the EOC and one of the ways we fund new equipment is with monies raised by the raffle. In order for this to work we need to sell enough tickets to actually make a profit! I'd like to ask all club members to help support the club by buying at least one book of tickets ($20/book of 5 chances). If you would like to purchase tickets please see AB2ZI at any meeting, Tuesday night class or Saturday open house.

I would like to thank Joey, KD2GAG, for working on the server for the EOC. It will be set up with folders for board members and committee chairs. There will also be a public folder which will have useful information in it for members. Also, a big thank you to Jeff, KD2ZQO, for hosting the club's website on his server. The website is managed by George, K2KVI, and he has being doing a fantastic job.

Our west coast member John Amedeo, NN6JA, has been working on our club video and I am sure it will be great. Thanks to members that have sent him videos of club activities it should be awesome.

I hope to see you all on the air and at our events, especially Field day.

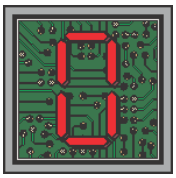
73, John Melfi, W2HCB



In the Classroom with AB2ZI

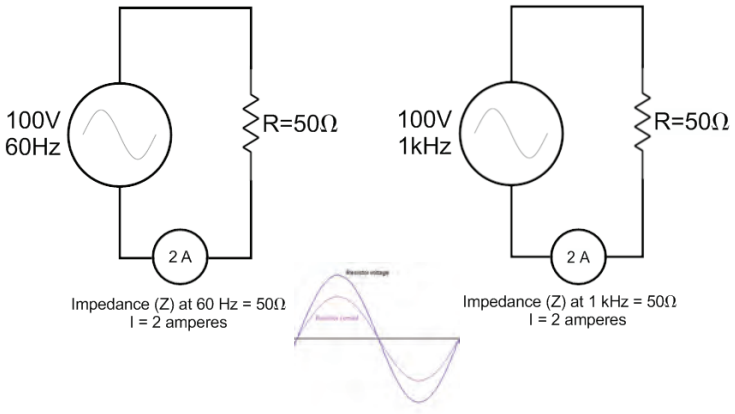
Impedance vs. Resistance

by Kevin Morgan, AB2ZI



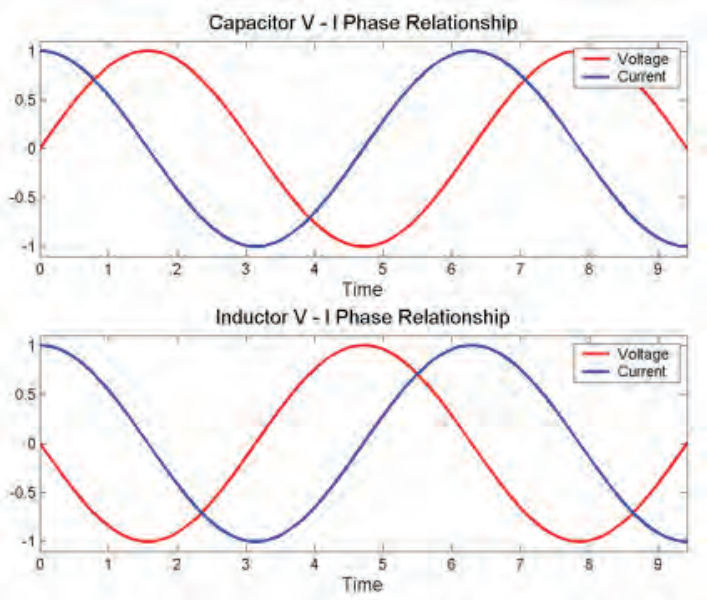
ne of the most used terms in ham radio has to be the word *impedance*. We hear it used when talking about antennas, test equipment and when discussing circuits in general. Some hams may become confused when they hear other hams using the word impedance when they are talking about resistance. We all learned about resistance from our earliest studies of electronics and our introduction to Ohm's law. Quite often you'll hear hams using the word impedance interchangeably when talking about pure resistances. So what is the difference between impedance and resistance?

Resistance refers to a purely resistive circuit, that is, one with no reactive components such as capacitors or inductors. In a purely resistive circuit both voltage and current are in phase with each other no matter what frequency is applied to it.



AC circuit at 60Hz (left) and 1kHz (right). Impedance is equal to resistance, voltage and current are in phase, current is 2 amps in both, and power consumption is 200 watts using any of the 3 power formulas.

When a circuit contains reactive components there is a phase difference between the voltage and current which effectively robs some of the power from the load. This is because inductors and capacitors *react* differently to the applied voltage and current because of how they work.



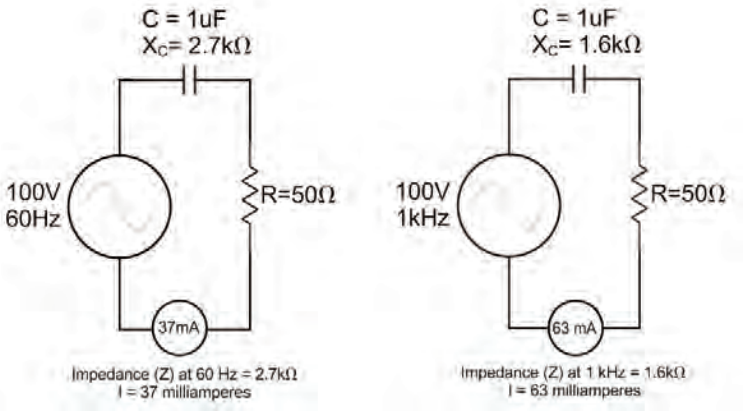
Phase relationship of current and voltage in a capacitor and an inductor.
Pure capacitance = current leading voltage by 90º
Pure inductance = voltage leading current by 90º

While these components do not use power, they *do* however have an opposition to current flow based on their value (i.e. how big or small they are) and the frequency of operation. Inductors and capacitors *react* to different frequencies by varying their opposition to current flow. That opposition is called *impedance* and is measured in ohms just like a resistance. This impedance, combined with the pure resistive part of the circuit, affects the total current in the circuit. This is because any impedance (opposition) to current flow will result in less current flowing then in a dead short. We find total current flow by substituting impedance (Z) for resistance (R) in ohms law: $I = E / Z$

Total current is used then to calculate the circuit's actual, or *real*, power consumption. Power consumption is measured with respect to the *resistive load* only! From the earliest Technician exam material we learn 3 different formulas for power: $P = EI$, $P = I^2 R$ *and* $P = E^2/R$. When we use any of these formulas in a purely resistive circuit we get the same answer for power. However, when we have circuits containing series or parallel reactances the first formula, $P = EI$ actually calculates the *apparent power* of the circuit in units of volt-amperes, or VA. It *appears* that the circuit is producing a certain amount of power, but some of the power is lost in storage of the reactive components and is directly related to the phase angle of the current to voltage.

Continued on page 4...

In the Classroom, cont'd from page 3...

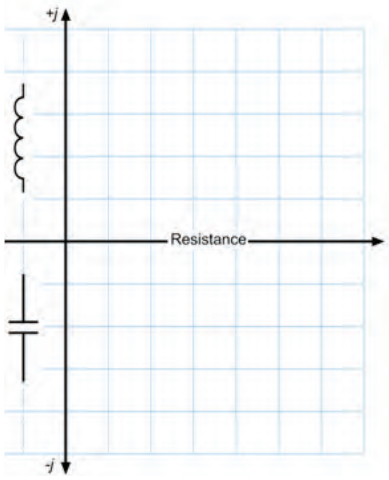


The majority of impedance contributed in the above example is from the capacitor. In this case, a series RC circuit, consumed power is calculated using $P = I^2 R$ only taking into account the resistor's value. In the circuit on the left we have 68.5 milliwatts and on the right 198.5 milliwatts. This is the real power. The apparent power is E x I and is 3.7VA (volt-amperes) on the left and 6.3VA on the right. The power factor is calculated by dividing real power by apparent power. On the left we have 68.5mW/3.7VA = 0.0185 or about 1.2%. This represents a phase angle of minus 88.9º. The angle is negative because the voltage lags in a capacitor (current leads).

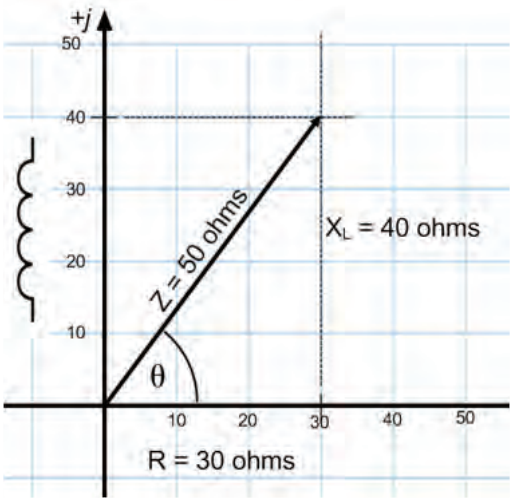
The same math applies to the series circuit on the right. Here the frequency has increased resulting in a lower X_C. This means less overall impedance and so results in an increased amount of current flow in the circuit. Here the apparent power is 6.3VA and the real power is 198.5mW. Power factor is 198.5mW/6.3VA = 0.0315 or about 3.2%. 0.0315 represents the cosine of the phase angle which is minus 88.2º (note: the cosine of a positive or negative angle between 0 and 90 degrees is the same).

If the reactance and resistance are in series, we use the formula $P = I^2R$ because current (I) is the same in all components of a series circuit, and yes, the *R* in this case is the value of total *resistance* excluding the reactance. If the circuit components are in parallel, then the voltage is the same across all the branches and we use the formula $P = E^2/R$.

Calculating the impedance of these circuits and the phase angle between the voltage and current involves the use of right angle trigonometry with resistance plotted on the positive X-axis and reactance plotted on the positive or negative Y-axis (positive for inductive, negative for capacitive).



With a series circuit the plotting and calculations are straightforward. Given a 30 ohm resistor and an inductor with 40 ohms of X_L we end up with the following triangle plotted:



The impedance (Z) of the circuit is equal to the hypotenuse of the triangle which is calculated using the Pythagorean Theorem:

$$Z = \sqrt{R^2 + X^2} = \sqrt{30^2 + 40^2} = \sqrt{900 + 1600} = \sqrt{2500} = 50\,ohms$$

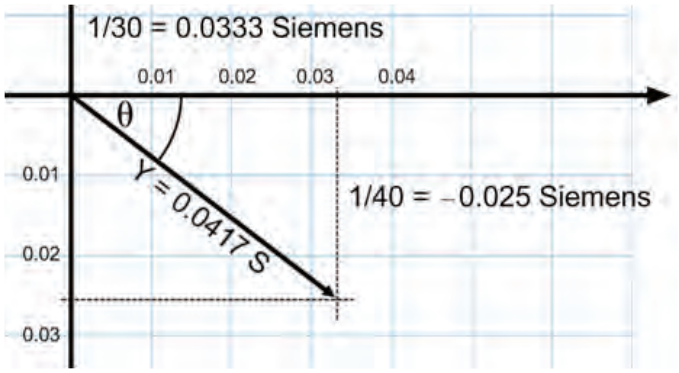
The angle θ is calculated by first finding its tangent, which is equal to the opposite side divided by the adjacent side, or 40 divided by 30 which is 1.333. Then using a scientific calculator we take the inverse tangent (TAN^{-1} on most calculators, or ARCTAN) and find that the angle is 53.13º. This is the amount the voltage is leading the current. That angle's cosine is also the power factor of the circuit, in this case the cosine of 53.13º is 0.6 or 60%. So if there were 100 volts applied total current is E/Z, which is 100/50 or 2 amperes. The apparent power is E x I, or 100 x 2 = 200 VA (volt-amperes) which when multiplied by 0.6 gives us 120 watts. We can check this using I^2 x R: 2^2 x 30 = 4 x 30 = 120 watts.

This shows that if you remember that power factor is equal to the cosine of the phase angle, you can calculate the real power usage of the circuit without needing to remember which power formula to use other than E x I.

Parallel circuits are more difficult to calculate until you've done enough examples for it to become second nature to you. The trick to help remember the procedure is to remember that when we calculate parallel resistors we use the reciprocal of reciprocals formula:

$$\frac{1}{\frac{1}{R_1}+\frac{1}{R_2}+\frac{1}{R_3}\ldots}$$

This will help you remember that parallel reactive circuit impedances need to be calculated using reciprocals as the starting point. This initial calculation is called an admittance calculation, admittance (Y) being the reciprocal of impedance and vice versa. So, using the same numbers from our last example, but putting the resistor and inductor in parallel this time we begin by plotting the reciprocal of the resistance and reactance but with one important difference. When we plot the reciprocal of the reactance it is plotted with the opposite sign, that is, an inductive reactance's reciprocal is plotted as a negative (in the capacitive reactance quadrant) and a capacitive reactance's reciprocal becomes positive! So, with R = 30 ohms and X_L = 40 ohms we first plot their reciprocals like this:



Then calculate the hypotenuse, which is the admittance Y, using the Pythagorean Theorem:

$$Y = \sqrt{0.0333^2 + (-0.025^2)} = \sqrt{0.0011 + 0.0006} = \sqrt{0.0017} = 0.0417\,Siemens$$

The phase angle θ is: $\tan^{-1}\frac{-0.025}{0.0333} = \tan^{-1} 0.75 = -36.87°$

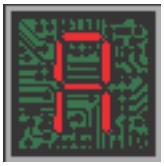
Now to obtain the impedance we flip the angle's sign from negative to positive and take the reciprocal of Y.

$$Z = \frac{1}{Y} = \frac{1}{0.0417} = 24\,ohms$$

The cosine of 36.87º is 0.8 (or 80%). Calculating power we first get the total circuit current with E/Z. Let's use 100 volts again for this case: I = E/Z = 100/24 = 4.17 amps. Using E^2/R to find real power we get 333.6 watts. Checking this with E x I to get apparent power and then multiplying by 0.8 (the power factor which is the cosign of 36.87º we get:

E x I = 100 x 4.17 = 417VA x 0.8 = 333.6W

N2L Special Event Station Commemorates Sinking of RMS Lusitania



s most everyone knows we will be operating a Special Event Station N2L in conjunction with *Radio Officers Association of Great Britain*.

Arrangements are being made to mark the centenary of *RMS Lusitania* being torpedoed and sunk on May 7th 1915. She sailed from New York on 1st May when she went down 123 US citizens lost their lives.

An amateur radio special event station will operate from the Lusitania home port of Liverpool with the call sign GB100MFA and I understand in the Republic of Ireland EI100MFA as the survivors were taken ashore in Queenstown. There will be an article in the *May QST* about this event.

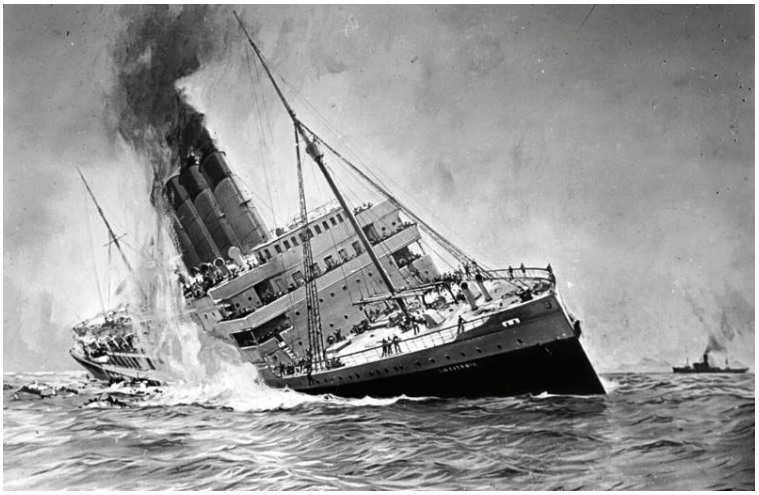
The *Great South Bay Amateur Radio Club* has stepped forward to sponsor this event for the Section. This SES will be open to all Section hams and Clubs. You may work from your home or club station. There is a schedule with two hour blocks both for CW and SSB and the approximate frequencies.

Please sign up at ***http://www.gsbarc.org/N2L.htm***.

This event will run from May 1st – May 15th (0001 – 2359 UTC)

There will be alot of information coming forth in the next few weeks. It would be great if we could fill as many slots as possible.

Please pass this information on. —Jim, W2KFV



1915 painting of the sinking

Should we weep for amateur radio?

By Dan Romanchik, KB6NU

In an amateur radio mailing list that I subscribe to, one fellow wrote, "I weep for the state of amateur radio in the US, since this dispatch is apparently necessary…" He then pointed to an article on the ARRL website that reminded hams that while their local time may be switching to daylight time, Universal Coordinated Time did not change (http://www.arrl.org/news/view/change-local-clocks-this-weekend-but-not-utc).

The implication, of course, was that we have dumbed down ham radio so much that a reminder like this was necessary.

This thread went on and on, eventually garnering 17 different replies. Before it morphed into a discussion of whether or not DST is a good idea in the first place, the replies echoed the sentiment in the original e-mail:

"It's become a push button, nanny state world, what do you expect, competence?"

"We are truly in a time of appliance operating, not only in ham radio, but in practically every aspect of our lives. :-("

At first, I had the same reaction. I thought to myself, "How dumb are we getting in ham radio, if guys have to be reminded that UTC doesn't change when we switch to daylight savings time?" After thinking about this for a while, though, I've completely change my mind on this.

I work with a lot of newcomers to amateur radio, and many of them just don't know how UTC works. This is not their fault—-they just haven't had the opportunity to deal with UTC. What these old timers (old farts?) didn't realize is that the ARRL article is not directed at them, but at the newcomers to ham radio.

I'll even go one step further. It's easy for us old-timers to be dismissive of newcomers' lack of knowledge, and then complain that amateur radio is getting dumber, but knee-jerk reactions don't usually help anyone involved. A much better approach would be to roll up your sleeves and teach them something. The only way newcomers are going to get to be old timers like us is if we help them learn stuff like this.

When not teaching newbies about UTC, you'll find KB6NU working on updates to his "No Nonsense" study guides, teaching one-day Tech classes, or blogging about amateur radio at www.kb6nu.com.

Inside the Squirrel Cage

by Caryn, KD2GUT

Thanks to ham radio, I've become quite the party animal. The NY QSO Party. The Virginia QSO Party. The Idaho QSO Party. The Michigan QSO Party. You name it, I'm there - always fashionably late, I've become one of the party people in the last six months, quick with the RSVP and the RST. Best of all, no Kardashians can be found crashing these soirees, where the only things more supersized than Kim K. herself are the superstations strutting their supersized amplifiers.

Besides, who can resist a party where you don't need to bring a hostess gift, shop for a new outfit or be grabbing your coat to head home because there's a curfew? The party that goes on all night is truly the reception heard 'round the world. And it's the closest this vegetarian may ever get to a Polish (or even a Virginia) ham.

I wish I could say I'm a consistently top scorer, but I'm not. I'm neither consistent nor tops. While I'm no party wallflower, I'm not the life of the party either. When I press the PTT button, I get my QSO on with the best of them, but then I keep track on my own balance sheet. At 100 watts, I haven't been able to climb my way out of a pileup yet but these parties are a great excuse for me to collect contacts for the hoped-for Worked All States Award, my first-year goal for a personal best. (So, in a sense, you might say I'm skipping the crowd scene at the all-you-can eat buffet and sticking, for now, to the pickings on the hors d'oeurve tray.)

"I coulda been a contender," says Marlon Brando's character, dockworker Terry Malloy, in the 1954 film, "On the Waterfront." In my 2015 version, "On the Wavefront," I'd like to think that I can, someday, be a contender too, waving my Cabrillo log like a victory flag. But I have no doubt Brando would understand my feelings completely, having been a licensed radio amateur himself, known alternately as both KE6PZH and FO5GJ.

Until then, ask me about my party plans for the weekend and I'll answer simply, "no contest."

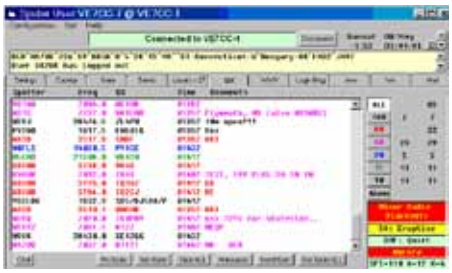
Real Time DX Information

by Bob Myers K2TV

Newly licensed Ham Radio Operators often ask about working DX and where can they find out where the DX stations hang out on the air. The best place to find that information is the DX Packet Cluster. Now the Packet Cluster is an a free internet service run by a few generous Ham Operators all over the world. The name PACKET CLUSTER is a throwback to when the service was run on the air, usually on two meter packet. It is now almost exclusively found on the internet accessed either on TELNET or using an interface program.

My choice for an interface program is VE7CC and can be downloaded at http://www.ve7cc.net free of charge. The VE7CC web page will give you an overview of the operation of the program and a link to download it to your computer. Setup is fairly easy and once you put in all your station information, it will not only give you a list of stations on the air, the band, frequency, mode and beam heading for those of you that have steerable antennas. You can check on a band by band basis or all of the bands on one continuous list. You can also post new DX stations AFTER you work them. Never post them before you work them because you will find yourself competing in a pileup for the very station you posted. Note that part of being a good DX Packet Cluster user is to post the DX stations that you hear so others may work them.

Of course there are other programs and even logging programs available that will link to the DX packet Cluster, but the VE7CC program is my personal choice.



YAHOO!

GSBARC has a New Yahoo Group and the old one has been deleted

If you are a member in good standing and want to join the club's new Yahoo group, go to:

http://groups.yahoo.com/neo/groups/gsb-arc/

and click on "Join Group" Be sure to add a note when filling out your information with your call sign so we know who you are!

Club Apparel

Want a shirt, jacket, hat, sweatshirt or t-shirt with a Great South Bay club logo? We now use *Mr. Shirt*, located at 80 East Montauk Hwy in Lindenhurst (*www.mrshirt.com*). Now you can get color matched backgrounds on your logo too. Check them out...

ARES/RACES Information

Div. 1—Town of Babylon ARES/RACES
Net: 146.685/R, Mondays 8:15 PM
EC/RO: John Melfi, W2HCB, (631) 669-6321
Div. 2—Town of Huntington ARES/RACES
Net: 147.210 MHz +600/ PL 136.5, Mondays 7:00 PM
EC/RO Steven W. Hines, N2PQJ, (###) ###-####
Div. 3—Town of Islip ARES/RACES
EC/RO: John J Blowsky, KB2SCS, 631-467-2410
Div. 4—Town of Smithtown ARES/RACES
Net: 145.430 MHz, PL136.5, Mondays 7:30 PM
EC/RO: Joe Albertus , KB2JOE, 631-664-6709
Div. 5—Town of Brookhaven ARES/RACES
EC/RO: Joe Werner, KC2BPS, 631-730-8694
Div. 6—Riverhead ARES/RACES
EC/RO: Donald Rollock, W2EUL, 631-929-0705
Div. 7—Southampton ARES/RACES
EC/RO: Dennis O'Rourke, KB2ZWW, 631-728-5424
Div. 8—Southold ARES/RACES
EC: Don Fisher, N2QHV, 631-765-2757
RO: Charles Burnham, K2GLP, 516-779-4983
Div. 9—East Hampton ARES/RACES
EC/RO: Nat Raynor, N2NEI, 631-324-3738
Div. 10—Shelter Island ARES/RACES
EC/RO: Neal Raymond, N2QZA, 631-749-9330

Suffolk County ARES/RACES Net:

Mondays 2100 Local - 145.330/R (136. 5PL)
Alternate Frequency - 145.370 (136.5 PL)

New York State RACES Net (HF)

Sundays 0900 Local, 3993.5 KHz LSB

2015 VE Session Dates

- April 25th
- May 23rd
- June 20th (3rd Sat. due to Field Day folowing weekend)
- July 25th
- August 22nd
- September 26th

All sessions are at the Town of Babylon EOC, located in the basement in the rear of town hall. Please bring photo ID, a copy and your original amateur radio license (if you have one), and any CSCE's you may have. Non programmable calculators are allowed. The exam fee is $15 payable by cash or a check made out to "ARRL VEC".

Need Antenna Work?

Sign-up on the list at the EOC. Please supply as much information about your situation so the committee can be properly prepared with assistance and tools when they come to your QTH.

Club Name Badges

Club name badges are available from ***The Sign Man (www.thesignman.com)*** of Baton Rouge, LA.

The badges which are 1-3/4 in. x 3 in. If you visit The Sign Man's webpage you can order the badges by using a drop down selection on the orders page and clicking on "Great South Bay ARC - NY"

April Birthdays

Jennifer, KC2TMA
George, KC2UJA
Tim, KC2TTT
Bob, N2DET
Jeff, AC2BQ