New Bern Amateur Radio Club

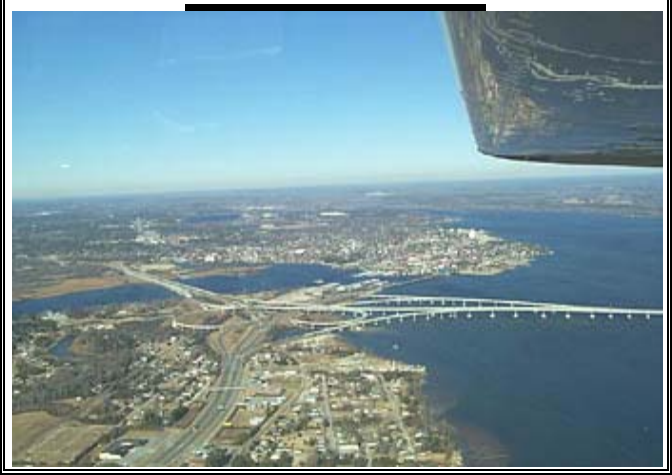

foto by W2RLG & W2HVX

Volume 33, Issue 2, February, 2010

Logo tnx to Eve, XYL of W2HVX

W4EWN/R

146.610/ 146.010 PL 100 Hz.
444.900 / 449.900 PL 100 Hz.

Website: http://www.nbarc.org

Next Meeting -- Thursday, Feb. 4, 2010

6:20 PM at The Courtyards at Berne Village, 2701 Amhurst Blvd.

Program: Bill Linquist, **K2UFC**, is going to talk about his Field Day radio.

Treasurer's report for January 2010

We have had 55% of the dues come in so far and that brings the bank totals up to: savings account stands at $2,462.52, and the checking account now is up to $950.84, for a total balance of the two at $3,413.36. Door prize money at the last meeting was $39.00. Now we have to concentrate on hearing from the other 45% of the membership. If you haven't paid the dues for 2010 , now is the best time to do it. We appreciate all those cards and letters. I will be attending the meeting on February 4th at the Berne Retirement Village dining room,.if it would be convenient to pay dues then.
Thanks.....Ray Hemphill, **W7OPH,** treas.

Meeting Dinner Menu

Cup of Chef's Choice soup, Swiss steak, Mashed potatoes, Sweet corn, Chef's Choice dessert , Coffee and Tea service, second meat alternative available for 5-8 ppl. $7.00 per person all incl.

Meeting Minutes

7 January 2010

The regular monthly meeting of the New Bern Amateur Radio Club was held this date and was called to order at 7:10 by President Dave Warwick, **KD4DJW**. There were 33 names on the roster, one of which is attached to these minutes.

Introduction were made from the floor with call signs and bands worked.

Ken McCain, **K4KDM**, announced that the VE's will have testing in February.

Sid Purvis, **WA4VBC**, spoke about a program on the History Channel and a very positive opinion about how important Amateur Radio is especially in the rural areas during times of emergency. Hopefully they will air it again.

We had a group discussion on New Bern's 300th anniversary and what we might do for this special occasion.

Dave Sousa, **K2CQV**, gave an excellent presentation on the Yaesu Ft-817. This Perfect for QRP work has a built in battery pack. Transmits on 160-10m 144/430-450 MHz has a wide receiver range. This super small radio operates USB, LSB,

CW, AM, FM. WFM.(AFSK), packet. Dave also showed the club some mini keys and a very small antenna setup. Thanks for your presentation.

Dave Warwick, **K4DJW**, spoke about the date for the club auction. The dates were discussed and we finally have it set for 6 February. Start collecting your items and any more details will be released at the meeting.

Ed Valentine, **W2YPM**, spoke about the upcoming 2M simplex contest and handed out the rules and log sheets. Sounds like a lot of fun. Talk it up and contact all your friends. The more you talk it up the more stations available for contacts.

The club made $39.00 on the raffle. Thanks for your support.

Motion to adjourn at 8:15

Robert Melle,.**KJ4HJH, secy**

The President's Corner

The Feb 4, 2010 meeting will be at our new meeting place, the Bern Village Courtyard Dining Room, located on Amhurst Road, which is off Glenburnie Road. Our previous Chef, (Bruce Thomas) has left employment with the Courtyards, the new Chef is Kim Carter. All previous arrangements made with Bruce will remain the same. Kim is very accommodating and I am sure everything will workout fine. I cannot make it to the meeting due to work related travel, but plan to be back just in time for the auction.

The Club Auction is set for Saturday Feb. 6th, 2010 at the Courtyards Bistro Room (the old Café). Set up time is 08:00 to 09:00 and the auction will run from 09:00 to 12:00. An announcement will be sent out with the details of the auction. Mac Eutsler (**WA0ZGL**), Bill Ash (**N2GAH**) and Greg Mijal (**WA7LYO**) have volunteered to be on the Auctioneer Committee. Thanks guys!

I had a lot of fun making contacts during the 2 meter simplex contest! I was surprised to find out how far I could talk simplex from my house. I only have a vertical on the roof of my house, no beam. I made 9 contacts, probably would have made more if I stayed up later, but I had to go to work in the morning so I did not stay up until 10:00 PM. That was a very good contest, thanks to Ed (**W2YPM**) for setting it up.

Has anyone been listening to any Amateur Radio relief efforts to/from Haiti? It is sometimes interesting, and is good training, to listen to real time emergency radio traffic.

73's Dave, **K4DJW**

ARES Angle

While the recent 2-Meter Sprint was not billed as an **ARES** exercise, it taught us some important lessons, and many of those lessons are things that are important in any emergency. Here are a few observations:

1. Simplex works better than we realized locally, even with less than optimum antennas. This is extremely important in an emergency, because we really cannot be dependent on any repeaters for communications to and from the Red Cross shelters and the Craven County EOC.

2. Simplex FM can work some surprisingly long distances with just a little effort.

3. A simple and short contest like this is **FUN**!

4. Some of us (well, yours truly for sure) need to periodically re-familiarize ourself with our radios. As an absolute last resort, we might even read the manual!

4. We can always learn something about our equipment. I learned that my power supply was not quite adequate to power my rig at its rated 50 watts... so I ran at about 35 watts.

5. Some of us procrastinate. I bought an 11-element Cushcraft 2 meter beam about 3 years ago. I finally got it assembled and temporarily mounted about an hour before this contest started. I didn't need it to reach any of the local repeaters, but it proved to be a big help for simplex.

We made at least a few contacts with hams who are not club members. Maybe we can encourage them to join, particularly if we continue to sponsor activities such as this that interest them.

I don't normally participate in the 8 pm ragchew. But after Sunday night's contest it occurred to me that I can at least find out who I can hear via simplex just by monitoring the ragchew: the only change required is to listen on 146.010 (the repeater receive frequency) rather than 146.610. I was surprised how many ragchewers I could hear on 146.010, meaning that I was hearing them direct with no repeater help.

When we do a 2M FM contest like this again, I'd like to know more about the setup each participant is running. For example, the transceiver model, the power used, the antenna type and polarization would all be useful to know. I'd also like good signal reports about the quality of the connection: for example, one operator was solid copy with full

quieting and good audio, but another had audio that was barely audible at times even though there was adequate quieting. Yet another varied a lot in signal strength, and even when quieting was full his audio was quite distorted.

My newly-assembled beam was temporarily pointed SE with no rotor, and horizontally polarized. I'm sure at least some if not most of the guys were using vertically polarized antennas. I have no idea to what extent this affected my communications, but it's yet another experiment on my to-do list.

I hope the other participants, particularly the **ARES** members, enjoyed this and learned as much as I did.

Related to simplex FM and **ARES**, I've been working with Robert Toler, the Coastal Carolina Red Cross emergency services director. Perhaps by next month I'll have a list of contacts for the primary Craven County shelters and we can begin arrangements to test existing antennas and install antennas where there are none. Robert is very interested in our participation.

That's it for this month.

73 de Jim, **KS4O**
Craven County **ARES EC**

NBARC 2 Meter FM Simplex Contest

First off ---- Please send me (Ed) your contest score, before the meeting. We have 3 awards to give to the winners, and were there any Hand held entries?

It was a Fun contest and for the first time we had QRM on two meters. That was neat. Two meters was alive with local CQ contest signals and simultaneous contacts.

The combined activity included 15 to 17 stations operating in 4 zip code areas. About 4 to 5 Simplex frequencies were used at once.

Distances ranged from - Oriental - Craven and Jones County. That is about 30 miles coverage for stations with gain antennas.

As an exercise take the mileage of the farthest contact that you made and draw a circle on a map of the area, this will describe what your station coverage is today with closed band conditions.

A tip on that, go to http://www.qrz.com/, enter the other station's call and click on "click for more detail" and you can see the direct mileage and the beam heading. You should check it to see if your exact lat. lon. co-ordinates are in the database.

You now have a goal and reference to increase this coverage with some spring time work effort. Also, maybe improving your operating technique would have resulted in more contacts.

Contests are fun. Contests are also a learning experience. When is the next one???

73,
Ed, **W2YPM**

Thanks to Jim, **AI4WL**, for promoting our 2m Sprint to the Pamlico club folks. You might think about participating in some of their on-the-air activities, for example:

PARS NETS:

Mondays, Pete's "Swamp Net" rag chew, 8:30 pm local, 28.460 Mhz plus or minus, USB. This freq. is in the 10M voice segment open to all licensed amateurs.

Wednesdays, Pamlico Emergency Net Practice and Rag Chew, 7:30 pm, Oriental Repeater, 147.210 + (PL151.4).

10 meter ground wave communications are similar in coverage to 2 meter simplex, low power can cover many miles, a beam is an advantage, but not necessary.

For Sale:

Butternut HV 6 vertical antenna, multi-band HF, 80 - 10m. One year old. Looks new. No rust, bends or missing parts. Includes 160m add on coil kit (never installed), instruction sheets for all.
$200 firm, or trade. Pick up in Kinston. Greg, WA7LYO, (252)523-1690, or email at: bluebirdtele@embarqmail.com

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Hamfests

Feb. 6: **Richmond Frostfest**, VA State Convention Richmond Raceway Complex 600 East Laburnum Avenue info@frostfest.com

Mar. 13-14: **Charlotte Hamfest**, Concord

April 3: **Raleigh Hamfest**, NC State Convention

IMPEDANCE Part I
ANTENNA IMPEDANCE

W4ULD 12-5 2009

Part II was published last month, but it was a "stand alone" article, appropriate for the time.

In most of my articles I have used the term Impedance, usually in rectangular form as R +/- jX but I don't remember explaining impedance. I just assumed that the readers understood it.

Every electronic circuit involving the flow of AC current (RF is high frequency alternating current) has an impedance which may be expressed in rectangular form as resistsnce +/- reactance, R +/-jX or in equivalent polar coordinates as, $Z < +/- \theta$. These are explained graphically in Figure 1.

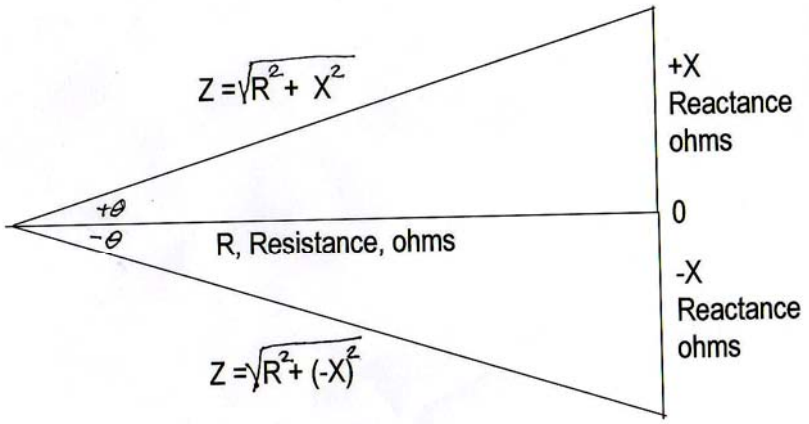

Figure 1

In the rectangular form the resistance is depicted along the X axis. And the reactance on the Y axis. Inductive or + values of reactance are plotted above the X axis and capacitive or – values below the X axis. The impedance is reported as $R +/- jX$. The *j* indicates that the resistance and reactance, although both are in ohms, are different kinds of numbers and cannot be combined. The situation is analogous to the use of imaginary numbers in mathematics where the letter *i* is used. However, *i* indicates current in electronics so *j* is used; however, mathematically, *jX* is treated as an imaginary number. The R and the X are in series; therefore, if two impedances are in series, the R's may be added and the X's may be added algebraically to arrive at the total impedance for the circuit. This is shown in Figure 2

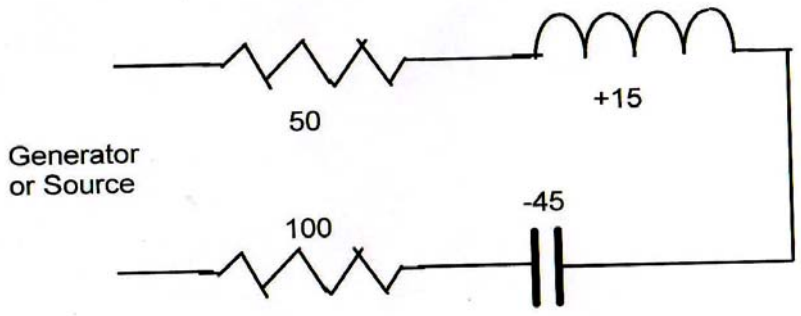

Figure 2

In Figure 2 two impedances are in series, 50 + *j*15, a resistor in series with an inductance having a reactance of +15 ohms, and 100 –*j*45, a 100 ohm resistor in series with a capacitor having a reactance of -45 ohms. The resistors add giving a total resistance of 150 ohms. The reactances add algebraically giving a total reactance of -30 ohms. The combination is then an impedance of R –*j*X = 150 –*j*30. So the circuit has capacitive reactance.

The ohms values of the inductance and capacitance are a function of the applied frequency and the size of the capacitor in microfarads or the inductor in microhenries. For the inductor:

$$X = 2\pi FL \quad \textit{where}$$

X = Inductive reactance, ohms
F = Frequency, Mhz.
L = Inductance, Microhenries

For the capacitor $$X = \frac{-10^6}{2\pi FC} \quad \textit{where}$$

X = Capacitive reactance,ohms.(Note the – sign which denotes
Capacitive reactance.)
F = Frequency, Mhz.
C = Capacity, micro-microfarads or picrofarads.

Returning to Figure 1, the designation for AC impedance is Z. The hypotenuse of R and X is Z. Therefore, $Z = \sqrt{R^2 + X^2}$. In polar coordinates the length Z is used along with θ. θ is known as the phase angle which may be + or -. A + phase angle indicates inductive reactance and a – angle indicates capacitive reactance. In polar coordinates the impedance is expressed as $Z < +/- \theta$. In Figure 2 the net polar expression would be *Z = 152.97 <-11.3* for the net impedance of R – *j*X = 150 –*j*30. The phase angle is in degrees. Many popular antenna analyzers report the antenna impedance in both forms.

Impedance is important in all AC circuits. The common Ohm's law in AC (and RF) becomes *E = ZI* where Z is as described above.

The input impedance of a circuit is that value which, when matched, will produce the maximum transfer of power to the circuit. A match occurs when the output impedance of the matching network has an R value equal to the R value of the impedance to be matched and the X value is numerically equal but of opposite sign. This is known as a conjugate match. For example, suppose a solid state transceiver with a 50 +j0 ohm output is to be matched to the input of a grounded grid amplifier having an input impedance of 100 + j30 at the operating frequency. The network would be designed for 50 +/-j0 input and 100 *–j30* output. However, most design calculation tables are based on the input impedance to the network (e.g. 50 ohms) and the impedance to be matched (100 + j30) . A low Q pi network with a Q of 2 is usually employed in this example. The very low Q is used so that the same circuit will operate over a broad range of frequencies without retuning.

The terms R +/-jX are called rectangular coordinates as depicted in Figure 1. Thus R represents the resistance of the circuit and +/-jX represents the reactance of the circuit. A + sign means that the reactance in the circuit is inductive and a – sign indicates the reactance is capacitive.. To effect a match, the R of the source must equal the R of the load and the X of the source must equal the X of the load but of opposire sign. Thus, the reactances cancel and the maximum power is transferred.

When calculating the currents and voltage drop in AC circuits, one must remember that only the R component of the circuit impedance draws power from the source; however the X component contributes to the voltage drop. Look at Figure 3 as an example.

Referring back to Figure 1, the current drawn by the circuit is a function of Z.

$$Z = \sqrt{R^2 + X^2} = \sqrt{10^2 + 25^2 = 26.9}$$

The current drawn by the circuit is: (Figure 3)

$$I = \frac{E}{Z} = \frac{10}{26.9} = 0.3717\,Amp$$

The voltage drop across the resistor is:

$$E = RI = 10 \times 0.3717 = 3.717\ \text{V}$$

Only the resistor consumes power from the circuit:

$$P = \frac{E^2}{R} = \frac{13.816}{10} = 1.38W$$

Thus, 1.38 watts is consumed by the circuit.

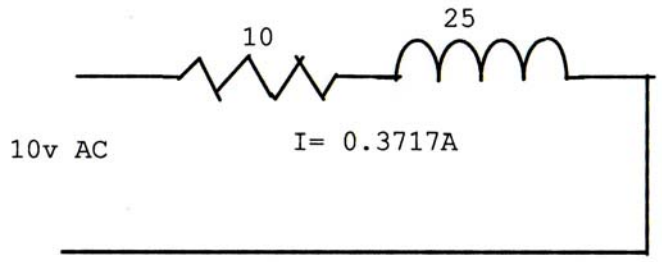

Figure 3

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The 2 Meter Sprint a participant's view

Well folks, I finally gave a contest a try. I now have a small dual band 10dbi gain antenna and an antenna rotor. I constructed a small temporary antenna tower and the antenna is at about 33 feet. The day before the club's 2 meter sprint, The **ARRL VHF QSO party** was on. I fired up my Icom 706 and started swinging my antenna around and around. With a little help from Ed Valentine, **W2YPM,** and Al Parker, **W8UT**, I was able to make my first two sideband contacts on 2m.

It is very much like HF in ways, like a signal might be there for a little while and then like magic poof it's gone. I was also brought up to speed on grid squares, I'm grid square FM15 and many other operating tips were provided to me by Ed and Al. I also found a free download of a grid square map on www.icomamerica.com. I was not very successful on sideband because the band just dropped out. I know I will try again and again. I also enjoyed the 2m Sprint on Sunday night. I made a few contacts with some of the local club members and worked 1 out of Oriental. With a little luck these 2m sprints will become a regular contest in our area I truly hope so. For anyone interested in 2m Sideband we have some experienced operators that I am sure will help you too.

Give It a try.
73,
Bob, **KJ4HJH**

NEW BERN AMATEUR RADIO CLUB AUCTION

Will be held on 6 FEB. 2010 at the Bern Village Courtyards, in the Bistro Room (Old Café), see attached map.

Set up will begin at 08:00 and the auction will run from 09:00 - 12:00.

Coffee, Danish, orange juice, and water will be served.

Auction Rules: ----------

Electronic Radio items and Computer Electronics

For donated items, 100% of the sales price goes to the New Bern Amateur Radio Club Treasury.

For sales items, the club will keep 10% of the sales price.

Payment of the item must be in cash or check (no credit cards) and made at the time of sale.

Purchased items must be removed immediately after the sale.

Condition of item must be stated. Working or Broken,
Please attached note of information for buyer and Auctioneer.

The auction committee will decide on the starting bid if not listed by seller.

Seller can have a reserve price that must be reached for a sale.

All sales are final and as is.

Committee
Greg Mijal WA7LYO
Mac Eutsler WA0ZGL
Bill Ash N2GAH

Cast of Characters for 2010:
President: Dave Warwick, K4DJW
Vice President: Ed Valentine, W2YPM
Secretary: Bob Melle, KJ4HJH
Treasurer: Ray Hemphill, W7OPH
Emergency Communications: Jim Wright, KS4O
Assistant Em. Comm.: Mark Rappaport, W2EAG
Public Svc/Special Events/VEC: Bruce Arnold, N8UTY
Repeater Trustee: Sid Purvis, WA4VBC
Program Committee Chairman: Kermit The Grouch
Photography: Mac Eutsler, WA0ZGL

Selected Local Nets Times are local time, unless otherwise stated

Craven County ARES: 146.61 MHz, 2000 before threatening wx; monitor during ARES activations
NC ARES Net, 3.923 MHz, 19:30 daily
Waterway Radio Cruising Club: 7268 kHz, 0745 daily
Fairfield Harbor Cruising Net, 7224, 0730 M-F
NC Morning Net: 3927 kHz, 0745 daily
Carolina Slow Net (CW): 3695 kHz, at 8PM ET (5wpm) daily
Coastal Carolina Emergency Net: 3908 kHz, 1900 daily
Tarheel Emergency Net: 3923 kHz, 1930 daily
Carolinas Net (CW): 3573 kHz, 1900 (20 WPM), 2200 (10 WPM) daily
Carteret County ARS/ARES: 145.45 mHz, 1930 Tues./ Emerg Traffic handling 1st Tues. after 4th Sat., monthly SKYWARN: 145.21 mHz, 2100 Tuesdays
Pamlico County ARES: 147.210 MHz, tone 151.4, 1930 Wed.
ENC Emergency: 146.685 mHz, 2100 Thursdays
ENC Traffic: 146.685 mHz, 2030 daily
NBARC Ragchew: 146.61 mHz, 2000 daily

New Bern Amateur Radio Club
http://www.nbarc.org
1508 Kimberly Road, New Bern, NC

The Newsletter Team:

Al Parker, W8UT, Editor, Ray Hemphill, W7OPH, mailings

The NBARC Newsletter is the newsletter of the New Bern Amateur Radio Club, Inc., 1508 Kimberly Road, New Bern, NC 28562. NBARC is an affiliated club with the ARRL and ARES.

 Any inquiries, comments, items for Swap Shop, suggestions, contributions, and letters for inclusion should be sent to the Editor, W8UT, at e-mail: anchor@EC.RR.COM