THE NEWSLETTER OF
THE KINGS COUNTY RADIO CLUB

KCRC

November 2018 ""差不多 " Volume 5, Issue 11[A]

Minutes of the November 2018 KCRC Meeting, November 7th, 2018

Our November "Pre-Meeting Question and Answer Session" was a sporadic, but lively affair, not focused upon any single topic.

The monthly meeting was called to order at 8:05 PM, by our President, Mitch N2RGA. Also present at tonight's meeting were Vice President Howard N2GOT Treasurer Richard KA2KDQ, General Secretary Roy AC2GS, Executive Board members-At-Large Berlotte KD2MYF, and Simon KD2LQE, Lloyd K2JVX, Al KD2QME, John WB2LFU, Gene KY2MY, Sam KC2LJC, Joe AC2AE, Jason KD2PUW, Marty W2MPR, Joe KD2QBR, Ralph KD2QBR, Niko KD2IVF, Jason KD2LRX, Alan KD2OMG, Donni W2BRVand our newest member Frank KD2QDU, and a new visitor Sandra, that decided to join our club towards the end of our meeting that night!

The vote to accept the minutes of the October meeting was passed unanimously.

Treasurer Report—Richard KA2KDQ, reported that our Treasury currently has $796.11 in assets in our bank account, $361.28 in our PayPal account and $80 in cash, for a total of $1,237.39. This past month we had three new memberships, and two past members rejoined our Club!

2 Meter Report—Richard KA2KDQ reported that he is averaging "about 7-8" check-ins weekly.

10 Meter Report—Our most recent Net had Roy AC2GS as temporary Net Control operator. Activity has diminished due to poor propagation limiting any DX check-ins. We could use more club member participation—if you have the ability to operate on 10 meters please consider checking in to our 10 meter Net—it's fun! The Club is still searching for a new Net Control Operator for this Net. Anyone with a decent 10 Meter setup with a free hour or two on Sunday morning should consider volunteering. Perfect reception or a very strong signal is not necessarily needed. The participants of the Net are available to relay messages back and forth, as needed. Please consider volunteering for this position. The Club executive committee will try to cover the Net Control Operator post until a more permanent replacement is found.

KCRC TechNet —Our Net Control Operator and Host, Roy AC2GS, reported that the TechNet is still around. But could really use some more participation. Roy again attempted to remind everyone at the meeting that the TechNet was NOT a podcast or a broadcast, but a participatory exercise in improving our understanding of this great hobby of ours. Gene KY2MY is our new TechNet co-host. Please consider listening and participating—either with questions or answers, or opinions. Participation makes or breaks a TechNet.

KC2RC FusionNet—The FusionNet continues to go strong, both locally and through its Wires-X room, and its Brandmeister access. There are 14-16 check-ins weekly and Wires-X check-ins from around the world! Jason has instituted a weekly question for all participants to answer—i.e why do you enjoy Fusion Digital mode. Anyone wishing to suggest a topic or question for the Fusion Net can email it to: TheFusionExperience@KingsCountyRadioClub.com .

Old Business: Our next VE Exam is scheduled for November 18, 2018. James KB2FMH will act as VE Liaison

Officer. For ANY other interested individuals, please contact any Executive Member of the Club or the return email address for these emails of our Club Meeting's minutes. People took time out of their busy lives to help get you licensed – pass on the favor!

Repeater status was discussed by Mitch N2RGA - Most pre-recorded audio files have failed to operate correctly, so Mitch will reprogram the controller with them the next time he goes to the repeater site. Joe replaced the failed final power transistors of our broken final power amplifier but it still doesn't work, so Mitch will bring it in for further evaluation and repairs. It was decided that our duplexer might not survive a re-tuning, so we have decided to leave well enough alone, regarding the duplexer, which seems to be operating within expected specs. After all this is done, Mitch has found a technician to drop by the repeater, gratis, to make sure that everything is set to the right levels. Club member Bob KD2PPV was very kind to donate his Yeasu FT-600DR, which replaced Mitch's radio that had previously operated as the Digital/Analog internet stream source. Our streaming service is active again at htpp://streaming.KC2RC.com, is back on the internet!

There were no new developments regarding Field Day 2019.

Discussions regarding a club logo patch were tabled due to the absence of the person that was going to produce them. We will revisit this (hopefully) during our December meeting.

Berlotte KD2MYF was appointed Executive Board Member-At-Large by the Executive Board, following the resignation of Milen KG2C.

New Business:

Nominations were made for the 2019 Club Executive Board: Joe AC2AE for President, Simon KD2LQE for Vice President, Richard KA2KDQ for Treasurer, Roy AC2GS for Secretary, Berlotte KD2MYF and Mitch N2RGA for Executive Board Members-At-Large. All candidates are presently running unopposed, but anyone wishing to self-nominate themselves is free to do so at our December meeting when a final vote will be conducted to fill all executive offices for 2019.

Our 2018 Holiday Party will be held December 5th, 2018 in Room 6B of Wesley House 501 Sixth Street, across the street from Methodist Hospital. Admittance will be free for all members that have paid their dues for 2019, and will be $10 each for non=members and members that have not paid their 2019 dues. Anyone interested in providing any additional food or beverage for the party, please coordinate this with Mitch N2RGA.

Lloyd K2JVX is spearheading a commemorative station event for the U.S.S. Missouri, at the Brooklyn Naval Yard on the weekend of June 8 and 9, 2019. Please contact Lloyd K2JVX if you are interested in participating in this special event.

Club member, Donni W2BRV, DEC of ARES NYC, made a short presentation to invite people at tonight's meeting to join local ARES or ARES' mailing list, to keep up to date with ARES operations.

At 9:35 PM the meeting was concluded.

See ya December 5th for our greet Holiday Party!!

These minutes were respectfully recorded and submitted by Roy AC2GS on this day, November 7th, in the two thousandth and eighteenth year of our Lord of Propagation…

Phun With Ferrites

Recently, there was a great discussion on baluns on our local repeaters, and less obvious ways that a balun could "go bad."

Damage to a balun's wire windings or capacitors usually are obvious to a visual inspection, but a balun's ferrite core, be it a torus, a bar, or something known as a pig-nosed ferrite core - its damage can be a very subtle thing.

Just a few of the shapes that soft ferrites can be molded into.

I have always been fascinated in the "almost magic" nature of magnets and magnetism, and it is no doubt the seemingly "magical nature" of the closely related electromagnetic wave that has attracted us all to this hobby, that we are happily participating in…

So, I thought I might investigate how the balun's ferrite core does some of its own kind of "magic."

We all use the term magnetism for a collection of different phenomena, including a person's "animal magnetism," but magnetism is not a single, simple thing.

For a start, there are many different types of magnetism in physics. What we usually mean when we say "magnetism" is more accurately termed ferromagnetism - objects that align their atom's half-filled electron shell's "spin" with an external applied magnetic field, and when the external magnetic field is removed the ferromagnet's magnetic dipole moments are "locked" into that orientation and continue to produce their own magnetic field.

In fact, that is just one "flavor" that magnetism comes in. There is *paramagnetism*, where the material aligns its magnetic dipole moments with an external magnetic field and is attracted to that external magnetic field, but when that external magnetic field is removed the material has no "memory" of that previous alignment of its own magnetic dipole moments - it "forgets" its previous magnetic alignment. There is *diamagnetism*, where the material reacts to an external magnetic field by aligning its own magnetic dipole moments *in the opposite direction*. Then there's *anti-ferromagnetism* and *super-paramagnetism*…

And something called "*ferrimagnetism*." *Ferrimagnetism* is very similar to *ferromagnetism*, except that some atoms line up *with* the magnetic dipole moment of the applied external magnetic field, while others line up opposing the external magnetic field - these two opposing qualities are not equal, so in the end a *ferrimagnetic* object is left with a net magnetic field aligned *with* the external magnetic field, even after that external magnetic field is removed.

Iron is ferromagnetic, but iron oxides exist in different oxidation states, sharing a different number of electrons with a different number of Oxygen atoms, called ferric oxide and ferrous oxide - it is this mixture of oxidation states that gives iron oxides their *ferrimagnetism*.

And even among *ferrimagnetic* material, there are different kinds! One type is called "Hard Ferrites" - by adding barium or strontium carbonate to the iron oxide, the material's own magnetic field, originally induced by an external magnetic field, is reinforced and more permanent, described by terms like high coercivity or high remanence. These are the "ceramic magnets" that may be adorning your refrigerator this very moment! The mineral Magnetite, a hard ferrite, was probably the first magnet discovered by mankind.

Our special attention for tonight, though, is for the so-called "soft-ferrites," which, having a low coercivity and low remanence barely hold onto their induced magnetic field soon after the external magnetic field is removed. They can, therefore, reverse their magnetic field without dissipating much energy, (or hysteresis loss). They are said to "conduct" magnetism, more than store it, and it is this quality that makes them so useful to us as the core in inductors, transformers, and as common mode current suppressors.

Soft ferrites are manufactured using a mixture of Iron Oxide, Nickel, Zinc, and Manganese compounds, heated in a low Oxygen environment at a particular temperature range and pressed into shape from sintered powder.

Different mixes possess different characteristics, like permeability, magnetic saturation point, frequency range, and temperature range. Mix #31 is a favorite with Hams, but the benefits of using other mixes is a great topic for arguments on the HF bands!

The powder of an iron powder core is generally 10 microns and smaller. The powder is treated to oxidize a nano-meter thick layer before it is pressed into a core, with 1 or 2% epoxy binder. The thin phosphate layer raises the bulk resistivity of the iron to about 10 trillion [10^10] ohms, and eddy currents are essentially eliminated. If the core is heated beyond about 170°C, the powder oxidizes more, and the insulation layer is destroyed. The elemental, magnetic, iron volume falls off by the cube of the thickness of the oxidized iron. In addition, the permeability of the iron drops off by some exponential factor as the volume fraction of iron decreases. The resistance goes down to several ohms of the bulk powder - so you end up with a ferrite with lower permeability and higher eddy currents.

Such a ferrite has kicked the proverbial bucket; it's shuffled off 'this mortal coil, run down the curtain and joined the bleedin' choir invisible!! THIS IS AN EX-ferrite!!

73,

Roy AC2GS