SOUTHEASTERN DX CLUB

Bulletin

DX CODE OF CONDUCT

September 2018

From the Pres

There are hints of Solar Cycle 25 according to Dr. Tamitha Skov, geophysicist and solar scientist (spaceweatherwoman.com) who reports that SC25 is underway based on new areas of solar surface activity. With that information providing a glimmer of hope that we may have been space-weathered the worst of dismal propagation long enough, and with the feel of fall in the air (?), what can we look forward to? Declining QRN levels, cooler temperatures for antenna projects and maintenance needs, plenty of exciting fall club programs and contests upcoming, and a great year-end holiday gathering on tap. Spread the word: the SEDXC is where it's at this fall. I hope to hear you on the air and see you at the meetings.

73 es gud DX,

Dick K5TF

Inside This Issue

September Meeting

Date/Time: **Thursday September 20th** @ 7:30 PM
Location: Rich Auditorium, Piedmont Hospital
Details at www.sedxc.org

Program Title: **A New Approach to Locating Power Line Noise (and other RFI)**

Speaker: **Jeff W4DD**

Efforts by hams to locate specific sources of RFI from high voltage arcing on power polls have usually been by listening to car radio while driving around or by rotating directional antennas (or both). Jeff has developed a new method of locating power line noise that allows him to see visual evidence pinpointing sources of power line noise using GPS and satellite mapping that has been highly effective in enabling power company resolution of noise.

Correction

In the description of the August meeting in the August issue of Bulletin, it was reported that our speaker, Steve K6ELI, was the author of an article in *QST* (April) on estate planning relating to our ham equipment. That was incorrect. The author of the article, The Inventory List (p. 62), is Noel K8NB. I take full responsibility for this error and offer my sincere apologies to all. —*Editor.*

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Treasurer's Journal

Checkbook Balance as of July 31, 2018: $10,948. Only check written in the past month: 57th Fighter Group Restaurant for $150 (Holiday Party Deposit).

Please note the funding requests on pp. 5, 6.

73,

Jeff K1ZN

Announcements

SEDXC Holiday Party will be Thursday December 13th at the 57th Fighter Group in Atlanta. Full details are **HERE**. **Please sign up by November 30th.**

Around the Shack
Hal N4GG

Receiver Noise from a Mystery Source

There is a noise source lurking in your shack. I know - I found this culprit in my shack - a real-world experience.

Consider coaxial cable, one of the basic components in every shack. It looks a lot like shielded audio cable and you can use it that way. I don't know why you would, but it works fine at audio frequencies and it will provide good shielding against 60 Hz hum. There is an upper frequency, called the cutoff frequency, where coax stops behaving as a transmission line; but we hams never worry about that – the cutoff frequency for RG8-X is around 90 GHz. Yes, that's a G as in "giga".

So the common garden-variety coax in our shacks behaves as a shielded cable from frequencies covering hertz to gigahertz. All coax has a small, usually very small, amount of signal leakage, but for ham purposes nothing outside our coax cables can get in and nothing inside our cables can get out - except at the ends. But, is that really true? It turns out the shielding properties of coax are fine for electromagnetic fields…which we usually just call "RF," but there is another type of field lurking around our shacks and around our world: magnetic fields.

Coax provides NO shielding to magnetic fields. NONE. ZERO. In fact, a length of coax hooked to a receiver makes a good magnetic antenna. Why is that?

A magnetic field "sees" coax as two wires that are quite different – the shield and the center conductor. A magnetic field (lines of magnetic flux if you prefer) sweeping through a piece of coax will induce different currents in the shield and center conductor since they are not physically the same. This will produce a signal in a receiver hooked to the coax. Sweeping magnetic fields are what make motors turn, generators generate, and transformers transform. There is nothing new here. It's important to note however, that the field can't be static. The field has to have an AC component to it – 60 Hz is typically what's around our shacks, but there is a source of much higher frequency magnetic fields to worry about.

Let's look at a small piece of physics before we go looking for our noise source(s). Magnetic fields don't propagate very well. RF can propagate around the world (DX), but magnetic fields are reduced in strength based on the cube of the distance. How does a magnetic flux of 1 gauss per meter-squared measured one inch from the source go down as we move away to two inches? The answer is one divided by 2 cubed, or 1/(2X2X2) which equals 1/8. Doubling distance cuts a magnet field by 7/8ths or 87.5%. This is why we don't communicate via magnetic fields. As an aside, two years before Marconi started work with RF, William Preece tried to span the English Channel magnetically. Marconi succeeded where Preece had failed.

Preece would have needed a gigantic magnetic field to signal across the channel – it's just not possible. Edison also worked on magnetic signal systems and gave up pretty quickly, observing the fall off of magnetism with distance. This is an interesting time to read about.

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SEDXC Chat Room: details on webpage

SEDXC Reflector: details on webpage

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Around the Shack (cont.)

Okay, how's this affecting my ham station? I have seen magnetic fields disturb my ham operation three times in 50+ years and I'll save the most important and fairly new magnetic source for last – but it's the one to watch out for.

Case 1: In the 1970s I bought a new Drake TR-7 which came with a matching power supply. I set the supply on top of the new rig and started getting 597 signal reports. The magnetic field around the power transformer was right on top of the VFO in the rig. The aluminum case of the rig and an identical one that enclosed the power supply were no help in stopping the magnetic field in the power supply from inducting a current somewhere in the VFO. The VFO had 60 Hz modulation on its output frequency. Separating the power supply from the rig by only one inch made it go away. Magnetism falls off fast. I kept the power supply on the floor after that.

Case 2: I was setting up for a contest and excited to try out my new Alpha 99 amp. I had checked everything out hours before the start of the contest. I was ready; I just had to "move a few things around" to start the contest. Flipping on the amp, the CRT screen on top of it went nuts (a non-technical term). CRTs were very susceptible to magnetic fields. The power transformer in the Alpha was the culprit. Again, only a few inches of separation returned the CRT to normal.

Case 3: This is the case that today lurks in nearly every ham shack. One day the noise floor at N4GG went from very low to S9. Wow! Where did that come from? I started turning things off and found that the notebook computer on the operating desk was the culprit, but strangely, with the computer turned off, the noise was still not totally gone. That computer had been in that exact spot for years. What had changed?

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Around the Shack (cont.)

I could make the noise get louder or quieter by what was on the screen on the computer, but I could never make it go away…until…I unplugged the computer's in-line power supply from the wall. So, what *had* changed? I had inadvertently kicked the computer in-line power supply laying on the floor onto a coax run that was in the receive signal path. See the picture below.

This month's hint: Separate your in-line power supplies from all your coax cables by a few inches or more - you will completely avoid what can be a bad problem. The worse thing you can do is have a very neat shack – complete with cable trays where the coax, AC line cords and AC to DC in-line supplies are all bundled together. If you simply have to be neat – then it's one cable tray for the coax and a second cable tray, separated by inches, for all the AC lines and in-line supplies. If you have a random arranged shack like N4GG, make sure you can't kick the wiring around with your foot – like I did here – such that you wind up with something that looks like the figure provided. My in-line supplies now hang from hooks at the back of the operating table, away from everything else, including my feet. My noise floor is back to normal – nice and low. How's yours?

73,

Hal N4GG

DXpedition Funding Requests

Dear SEDXC,

First thanks for sponsoring some of my previous trips, I have always appreciated that.
Now, I would like to ask for a small contribution to offset some of my costs going to Chad as TT8KO next month.

Single-op trip for 12 days. License is TT8KO. LoTW is FREE, and I already received the certificate. QSL via LA7GIA
QTH: N'Djamena.

I will definitely make an effort to work NA.

I will use the following equipment:
1 x Radio Elecraft K3 (upgraded). 1 x Radio KX3 as backup
1 kW Juma amplifier
My favorite 2 el Mosley beam: 20-17-15-12-10m up abt 25 meter
30/40m dipole up about 25-30m.
80m antenna, top-loaded vertical - SPIDERBEAM POLE
160m top-loaded 28m tall vertical - TBD
Various backup TX antennas for different bands.
Various RX antennas: K9AY, BOG and beverage

My budget is about 5300 USD. It covers flight, accommodation, VISA, license, and admission fee. Excluding any equipment charges.

Let me know if you need any more info, and thanks for considering this request.

73 Ken
LA7GIA
http://la7gia.com/Chad/index.html

Dear OM,

Via this way we want to inform you about our next DX-Pedition to Kosovo.

Z68UR will be active from 20 – 30 September 2018.
Main goal is SSB and FT8.

Place: 41 - Club Log Most Wanted DXCC list.

Today we put our new website online, please take a look www.united-radio.be

We hope you want to spread the news between your readers | members.

When you have questions, please write us: max@on5ur.be.

We hope to work you all.

73' Max ON5UR | Z68UR.