



Bulletin



July 2019

From the Pres



Dick K5TF

The SEDXC Board met for lunch July 5th at Sprayberry's BBQ in Newnan. While enjoying what Lewis Grizzard termed the best BBQ in the South, including a second order of Vidalia onion rings for me, we mapped out the first few months of the new club year. We have some exciting activities in the works beginning with this month's meeting, so you don't want to miss first meeting of the new club year. Mike ND4V has a great program for our July 18th meeting, and we come early to eat and swap propagation yarns in the Piedmont Hospital restaurant.

73,

Dick K5TF ❖

This Month's Meeting

Date/Time: **Thursday July 18th** @ 7:30 PM
Location: Rich Auditorium, Piedmont Hospital
Details at www.sedxc.org



Program Title: Virtual Tour of "Last Man Standing"
Sound Stage and Ham Station

This month our program will be a virtual tour of station KAØXTT and a tour of the set of Last Man Standing. The back stories of why Mike Baxter is a ham, where did the equipment came from, and how many of the cast and crew have gotten their ticket will be revealed.

John Davis WB4QDX and Ed Woodrick WA4YIH were guest operators at the club station KA6LMS last March and have a great report on the challenges of operating from a TV sound stage. John will share his experience and how they managed the pile-ups.

INSIDE THIS ISSUE

- 1 From the Pres
- 2 Treasurer's Journal; Announcements
- 2 Club Officers
- 3 Around the Shack
- 6 25 Years Ago in SEDXC

Treasurer's Journal

Checkbook Balance as of July 1, 2019: \$14,590

Proposed Budget for 2019 – 2020 is below and will be voted upon in the July meeting.

Proposed SEDXC Budget for 2019 - 2020

DxPedition Grants	\$7,295
Club Picnic -- Fall	\$300
Holiday Party	\$250
Speaker / Program / Gifts	\$1,000
Webmaster / IT	\$100
Postage	\$25
Insurance	\$200
Beacon Project / Clublog	\$150
Equipment	\$300
Visalia Raffle Prize	\$400
Total	\$10,020

73,

Jeff K1ZN ♦

Announcements

None this month.

Little Pistol Report de WU4B



My preference for DXing has been as a Little Pistol: 100w and QRP (water pistol?) with simple wire antennas. My DXing career began at the beginning of solar cycle 24 (2006). To date, 12 DXCC certificates have been earned: eight bands + CW + SSB + Mixed + QRP. I do have an amp, but it is rarely used. To date, 300 countries have been confirmed at 100w and 163 at QRP. At a total country count of 314, I'm not at all sure where the next

ATNO will come from, if at all. "Patience, grasshopper...."

But I love to get on the air and make contacts with stations not in my log. I may have the country worked (several times), but if THAT call on the cluster is not in the log, I'm going for it---at 100w or even QRP. CW is my favorite mode (99 44/100 of the time). Not currently interested in 160m or 6m DX, it would seem, then, that my ham activity as a Little Pistol would be limited state-side QSO parties (not a bad thing at all) and contesting. DXing will be very slow until Cycle 25 begins (so I'm told), and it's not at all certain when that will be, right?

Au contraire mon ami. In April, I realized there was one DXCC award still possible from my modest station and with the lackluster propagation: DXCC Digital. I had tried RTTY a few years ago and, after working three countries (and several states), lost interest. PSK31 and JT65 didn't excite me either. FT8 is different, however, as it purports to copy/decode signals well below the noise level, which I take to mean below my ability to hear. So, I decided to give it a test drive. Integrating radio and computer decoding at S/N levels that are negative fascinates me.

Results here have been gratifying for a modest station. Running 100w to simple antennas (doublet; hex beam), in about eight weeks, 115 countries have been logged at WU4B with 95 of them confirmed in LOTW. My goal is for 100 LOTW confirmations, so all I need are three more. But of the remaining 20 countries in the log, none provide LOTW QSLs. Ten of those in the log are good in ClubLog with OQRS capability, and I have sent and received three cards to round out the 100. My bride and I enjoy receiving these cards and locating them on an old National Geographic globe. I'm not sure spending a lot of time looking for three new DXCC entities running FT8 with LOTW confirmation is worth it.

What has amazed me has been the long distance of some of the countries at 100w given the sunspot numbers at little more than zero: China, BD; Japan, JH1; New Zealand, ZL1; Australia, VK1; Azerbaijan, 4J1; Israel, 4Z; Saudi Arabia, 7Z; Lebanon, OD5; Oman, A45; Bahrain, A92; Qatar, A71. Some of these stations I called not expecting them to hear me only to be surprised when they returned my call and with a signal level (for some) at -20.

Continued on p. 5

SEDXC OFFICERS

President: Dick Baxter, K5TF
K5tf58@gmail.com

Vice President: Mike Weathers, ND4V
ND4V@comcast.net

Secretary: Paul Kelley, W4KLY
w4kly@bellsouth.net

Treasurer: Jeffrey Cantor, K1ZN
jacantor9@gmail.com

Activities: Norm Schklar, WA4ZXV
Wa4zxv@arrl.net

Appointed Positions

SEDXC Bulletin Editor: Clark Macaulay, WU4B
clark.macaulay@gmail.com

Membership Committee Chairman
Bill Barr, N4NX
n4nx@arrl.net

Webmaster: Chaz cone, W4GKF
w4gkf@chazcone.com

Club Communications

SEDXC Webpage: www.sedxc.org

SEDXC Chat Room: details on webpage

SEDXC Reflector: details on webpage

SEDXC Bulletin is published monthly by the Southeastern DX Club. All opinions expressed by the contributors do not necessarily reflect those of the editor, officers, or club. All rights reserved. ❖

Around the Shack de N4GG



RFI In the Shack

At one point in my career I had responsibility for a large EMC/TEMPEST lab - a fun place to work for any technically-minded ham. EMC (electromagnetic compatibility) labs consist of a room-sized test chamber with copper walls, floor and ceiling. The copper is there to keep any RF from getting into the room from outside. Inside the room the walls and the ceiling are coated with RF absorbing materials. Also in the test room is a receiving antenna and other specialized sensors looking for RF emitted from an article placed there to be tested. See **Figure 1**.

TEMPEST stands for Transient ElectroMagnetic Pulse Emanation Surveillance Technology. Aerospace has jargon that just won't quit. TEMPEST is mostly the means to measure emissions from things like computers. Did you know emissions from many computers can be detected at a significant distance, and with smart signal processing it can be possible to know what the computer is doing? It's computer eavesdropping.

Hams are not concerned with TEMPEST – if someone wants to watch my shack computer decode FT-8 from a van across the street – more power to them. This column is about EMC (electromagnetic compatibility), something hams do deal with in their shacks. I've only mentioned TEMPEST as a possible point of interest. We live in the post-privacy era.

Ham related EMC issues come about two ways: via radiated emissions and conducted emissions. That's more technical jargon, and we usually refer to unwanted man-made noise as "RFI." I think it's important however, to realize that RFI can be received "off the air" (radiated emissions) and also through things like power supply cables (conducted emissions).

Cont. on next page

Around the Shack (cont.)

The radiated emissions cases are treated thoroughly in the handbooks, QST articles (see the archives) and myriad places on the web. RFI sources include everything from electric fences to your neighbor's plasma TV set. Computers and LCD monitors are other sources encountered frequently. Lightning is also a source of RFI, one you might think you can't do much about. That's not quite true if you can steer your antenna. Place the null of your antenna in the direction of the storm – that helps. If the storm is overhead, however, it's time to go QRT and disconnect.

The topic I'd like to highlight (finally!) is conducted emissions – one we often overlook. In a well-appointed station there are A LOT of wires coming in and out of our rigs: power cables (120 VAC or 13.5 VDC), PTT lines, keying lines, microphone lines, speaker lines and on and on. Every one of those input and output lines breach the shielding the metal case of our rig provides. Oh, and let's not forget the recently added (and very noisy) RS-232, and/or Ethernet and/or USB connections.

Well designed and physically larger rigs have room inside the case for shielding and filtering on the input and output lines to prevent noise current flowing on the connecting wires from reaching receiver components inside the radio. Smaller rigs, even supposedly well designed ones, don't have the room for the chokes and the shielding techniques needed to keep outside noise sources from being conducted into the radio through unwanted paths.

How do we know if we have receiver noise from conducted emissions? It's pretty simple – turn on your radio with a dummy load connected. Tune the radio carefully. What do you hear? You should hear white noise and nothing else. The white noise should be below S-zero and not change dramatically as you sweep in frequency. If you hear birdies, frequency ranges that are noisier than others, etc., your rig is probably suffering from noise being conducted in via one line or another.

Finding conducted noise sources is straightforward. Start unplugging cables. With some luck you will find the cable or cables that are the culprit.

The "fix" can be simple as well. **Figure 2** shows the ubiquitous camp-on ferrite core that will sometimes magically cure receiver noise problems. There is no magic involved however. Clamp-on cores form a common mode choke that stops the flow of noise current from the connecting wires into the radio. We see these chokes in many places - they are on the I/O lines of most computers including, importantly, on in-line power supply wires. They are also on the power and signal cables of LCD monitors.

Often, clamp-on cores are not good enough to solve conducted emissions problems, and there is a more robust solution where needed. **Figures 3 and 4** show common mode chokes made from winding cables around ferrite cores. For hams, number 43 cores are a good choice.

Do these work? I have had great luck with them. Figure 4 shows a common mode choke for an AC power cord. I used such a choke on the power cord of an Ameco preamp years ago and it turned a very noisy preamp into a very quiet one. We sometimes think AC power connections are a source of 60 Hz hum and that's about all. It's not the case! Power connections, 120 VAC or 13.5 VDC, are the number one culprit for conducted emissions over very wide RF frequency ranges.

DC power lines are often the worst noise conductors of all. Many radios do not include a built-in power supply. Here are some examples: FT-857, K3, TS-450 and the IC-706. I can name one or more from every manufacturer. Many of these radios are physically small and don't have the room inside for first-rate chokes and shields. When diagnosing noise entering externally-powered radios the DC power lines should be tested first – starting there can yield quick results. That is done by powering the receiver from a battery and seeing if receiver noise drops. If it does, add a common-mode choke by wrapping both leads of the power cord around a ferrite toroid – Figure 4. If you don't wish to build your own common-mode chokes – there are commercially available chokes made for amateur stations. An example is shown in Figure 5. Here is a link to some of these products:

<https://www.arraysolutions.com/ac-7b>

The worst of the worst noise sources are switching power supplies, although RS-232, Ethernet and USB connections are not far behind. Imagine the noise conducted on a gigabit Ethernet cable! If at all possible, use linear supplies in the shack – not switchers. Linear supplies cost a little more but they are worth it. Astron supplies are clean as a whistle. Cheap switching supplies are often a disaster.

The “bias-T” is a device for inserting DC power onto a coax run at the shack end, and stripping the DC power off at the far end. Bias-Ts must be powered with clean DC voltage – they are injecting whatever power supply noise there is directly into the antenna jack of the receiver. A Bias-T should always be powered from a linear supply.

At N4GG I use an Astron linear 5 amp supply to power all the accessories. It was worth the investment - made over 30 years ago. I use an Alinco DM-330MVT switching supply for testing rigs, charging batteries and non-critical applications. It is the quietest switching power supply I have found and there is a reason it's so good - it has two common mode chokes inside the supply – an excellent design.

I hope this helps you hear weak signals with your receiver free of unwanted conducted noise.

73,

Hal N4GG❖



Fig. 1
Typical TEMPEST Lab



Fig. 2
Clamp-on
Ferrite Core



Fig. 3
Common Mode Choke
for Ethernet Cable



Fig. 4
Common Mode Choke
for Power Lines



Fig. 5
Commercial AC Power
Common Mode Choke

Little Pistol Report (cont.)

Comments have been written about FT8 as “not real ham radio” or only “button pushing”. My experience has been a little different. I still remember the thrill of hearing my call coming back in CW for my first DX contact (2006). Ditto for hearing a rare ATNO like Heard Is. VKØEK (2016). Well, for some of my FT8 contacts, I experienced the same anticipation with repeated exchanging of reports, wondering if we’d be able to copy/decode each other at such low signal levels, and then followed by the exhilaration when “RR73” was decoded. I guess, for me at least, any contact by radio is still magic.

Being a Little Pistol is enjoyable. Others really like being a Big Gun; I’d like to try that some day with 1.5KW and a SteppIR at 100’, but that is not likely. I’ve now returned back to CW—my first love in ham radio—while keeping one eye on the clusters for a new one that will get me closer to 100 LOTW confirmations on FT8. It has been a wonderful learning experience and a great deal of fun. I’ll keep the WSJT-X software installed, though, and experiment with FT8 QRP just to see how far I can reach. And, who knows, maybe FT8 will come in handy to bag DXCC #315!

73 es gud DX,

Clark WU4B❖

SEDXC OFFICERS

President: Delaine McCarthy, KM4FV
H: 993-9758 W: 642-2003
V. President: Dick Bentley, W4UFT
H: 393-2848/2150 W: 913-3624
Secretary: Buddy Harrell, W4OUN
H: 296-7641 W: 493-2272
Treasurer: John Tramontanis, N4TOL
H: 587-4623 W: 843-5253
Activities: Neal Sulmeyer, AE6E
H: 926-8422
Membership: Verne Fowler, W8BLA
H: 993-2909 W: 518-4634
Editor: Rick Glisson, N4XMX
H: 352-5349 W: 522-8364

DX PACKET FREQ. (2400 baud)

W8ZF	145.63
K4KG	144.91
N4UCK (ARCDX)	145.65, 144.97
KK4JF	145.71 (also 1200)

DX COMMUNICATION FREQ.

Simplex	147.54
Melvin	147.51
K4JPD Repeater (tone 7)	147.795/T-195/R
W8BLA/R	442.075+

NEXT MEETING

October 18th, 7:30 PM, Old Hickory House, Days Inn on Roswell Rd., just inside I-
285