

SOCORRO AMATEUR RADIO ASSOCIATION

SARA NEWS

WWW.SOCORROARA.ORG

NOVEMBER 2017



MEETINGS

The minutes for meetings are at
www.socorroara.org/sara/minutes.

The agenda for meetings is located at:

www.socorroara.org/sara/agenda/agenda.pdf

The November 2017 meeting will be at the Socorro County EOC on Neel Avenue on November 8, 2017.

SARA REPEATER

SARA supports a VHF repeater located on Socorro Peak immediately west of Socorro. The repeater is “open”. The auto patch is currently inoperative.

146.68 (-)

100 or 123 Hz required

123 Hz on output

SARA also supports a UHF D-STAR module ‘B’ operating at 444.500 MHz + 5.000
Registration instructions are at
www.socorroara.org/sara/repeaters/D_STAR_Gateway.pdf

CLUB OFFICERS

President: James Boswell KA5SIW
Vice President: Brad Smith KD5JNI
Secretary: Bear Albrecht W5VZB
Treasurer: Luis Aguilar WB5JMD
Director: Jim Lommen KC7QY
ARES DEC /Director: Al Braun AC5BX
Newsletter Editor: Anneliese Bowman AD6UY

I would like to have a little feature on tips, tricks and safety hints in future issues. Please share your favorites with me by email ad6uy@powerc.net.

COMING EVENTS

Exam Session
11/11/2017
Sponsor: Valencia County ARA
Location: Valencia County ARA Clubhouse
302 Rio Communities Blvd Belen NM
Time: 9:00 AM (Walk-ins allowed)

Exam Session
11/18/2017
Sponsor: High Desert ARC
Location: APD Northwest Area Command Station
10401 Cibola Loop NW, Albuquerque NM
Time: 12:30 PM (No walk-ins)

MESSAGE FROM THE NEW PRESIDENT JAMES BOSWELL KA5SIW

As I start this article I have to ask myself, "What the heck did I get into?". Relax, I have done this before, and now I am ready to improve. From that first attempt at leadership I have learned many lessons. The big question is if I can apply what I have learned. Let us take a moment and look at the whole enchilada and figure a course of action.

First thing to consider is that we have two strengths: we have good members and we have a bit of money. However there are some running issues that we need to move forward with and solve. With a good measure of hope and some determination, we will address these three issues:

1. Get the station working at the EOC.
2. Get the D-star system working.
3. Get the 146.68 repeater system correctly set-up and documented.

Working together we can accomplish these goals.

At this time we have two main events, the Hamfest and Field Day. We have done great this past Hamfest, maybe one of the best Hamfests ever. On that positive note, I want us to chart a new course in our Field Day endeavor, and keep this momentum going.

In the past Dave Johnson has had some good ideas, like the September picnic. We need to revisit that event. Maybe a Welcome Spring picnic in April. What do you think? One very popular event with other clubs is a monthly night out, where we gather at different local eateries. Some of us meet at the El Camino Real Restaurant before meetings, but maybe it is time for a change. A rotation among several restaurants might be fun.

We have former members and we need to work to get those wayward sheep back into the flock. With equal diligence we need to bring new hams into our group. A blitz class and test session might be due in February.

Amateur radio must be brought to the people. I want us to display amateur radio at work, at bike races, Festival of the Cranes, gun shows, and on Tech campus – any place the public gathers. Everyone has

a cell phone, so that HT will not get much attention, but a portable solar powered HF station, people will notice that.

With the use of digital cameras, I think we could periodically conduct a virtual tour of someone's station. We are not talking rocket science here, just a few photos on a memory stick and a quick explanation followed by a question & answer period. Since every one of us has solved station set-up problems, we can exchange solutions so nobody has to re-invent the wheel.

These are just a few of the ideas floating around in my head. Please bring your ideas to our November meeting so that we can all consider ways to keep our Ham Fest momentum going.

ON CW WAYNE BURDICK, N6KR, CO-FOUNDER OF ELECFRAFT

Reprinted here with permission and thanks to Jim, KC7QY for finding this.

I find that CW has many practical and engaging aspects that I just don't get with computer-mediated modes like FT8. You'd think I'd be burned out on CW by now, over 45 years since I was first licensed, but no, I'm still doin' it :)

Yes, FT8 (etc.) is a no-brainer when, despite poor conditions, your goal is to log as many contacts as possible with as many states or countries as possible. It's so streamlined and efficient that the whole process is readily automated. (If you haven't read enough opinions on that, see "The mother of all FT8 threads" on QRZ.com, for example.)

But back to CW. Here's why it works for me. YMMV.

CW feels personal and visceral, like driving a sports car rather than taking a cab. As with a sports car, there are risks. You can get clobbered by larger vehicles (QRM). Witness road rage ("UP 2!"). Fall into a pothole (QSB). Be forced to drive through rain or snow (QRN).

With CW, like other forms of human conversation, you can affect your own style. Make mistakes. Joke about it.

CW is a skill that bonds operators together across generations and nations. A language, more like pidgin than anything else, with abbreviations and historical constructs and imperialist oddities. A curious club anyone can join. (At age 60 and able to copy 50 WPM on a good day, I may qualify as a Nerd Mason of some modest order, worthless in any other domain but of value in a contest.)

With very simple equipment that anyone can build, such as a high-power single-transistor oscillator, you can transmit a CW signal. I had very little experience with electronics when I was 14 and built an oscillator that put out maybe 100 mW. Just twisted the leads of all those parts together and keyed the collector supply--a 9-volt battery. With this simple circuit on my desk, coupled to one guy wire of our TV antenna mast, I worked a station 150 miles away and was instantly hooked on building things. And on QRP. I'm sure the signal was key-clicky and had lots of harmonics. I've spent a lifetime making such things work better, but this is where it started.

Going even further down the techno food chain, you can "send" CW by whistling, flashing a lamp, tapping on someone's leg under a table in civics class, or pounding a wrench on the inverted hull of an upside-down U.S. war vessel, as happened at Pearl Harbor. Last Saturday at an engineering club my son belongs to, a 9-year-old demonstrated an Arduino Uno flashing HELLO WORLD in Morse on an LED. The other kids were impressed, including my son, who promptly wrote a version that sends three independent Morse streams on three LEDs. A mini-pileup. His first program.

Finally, to do CW you don't always need a computer, keyboard, mouse, monitor, or software. Such things are invaluable in our daily lives, but for me, shutting down everything but the radio is the high point of my day. The small display glows like a mystic portal into my personal oyster, the RF spectrum. Unless I crank up the power, there's no fan noise. Tuning the knob slowly from the bottom end of the band segment to the top is a bit like fishing my favorite stream, Taylor

Creek, which connects Fallen Leaf Lake to Lake Tahoe. Drag the line across the green, sunlit pool. See what hits. Big trout? DX. Small trout? Hey, it's still a fish, and a QSO across town is still a QSO. Admire it, then throw it back in.

(BTW: You now know why the Elecraft K3, K3S, KX2, and KX3 all have built-in RTTY and PSK data modes that allow transmit via the keyer paddle and receive on the rig's display. We decided to make these data modes conversational...like CW.)

Back to 40 meters....

73,

Wayne N6KR

HAMFEST VE SESSION

Our VE session was a success! There were 8 candidates and we got 4 Technicians, 1 General and 1 Extra. Congratulations to our new hams.

A USEFUL LITTLE UTILITY

<https://time.is/>

Use the "hamburger menu" in the upper right corner to determine the time in any time zone and the UTC time.

AN INTERESTING IDEA FROM HACKADAY

<https://hackaday.com/2017/10/16/why-not-expose-your-pcbs-through-an-lcd/>

NASA TEST

This has nothing to do with amateur radio but the video of the static test is candy for rocket geeks.

<https://www.nbcnews.com/mach/science/watch-nasa-test-new-rocket-engine-deep-space-missions-ncna815081> j

ONE RIG TO RUN THEM ALL

PART ONE: INTRODUCTION

RAY CALKINS, NORBT

Imagine if you could own a single radio that could receive and transmit on every band. This dream rig would be able to handle AM, FM, SSB, APRS, PSK31, PSK63, AMTOR, PACTOR, RTTY, MT63, D-STAR, MFSK, Hellschreiber, AX25, ATV, frequency hopping and spread spectrum. Furthermore, it would have the ability detect Doppler shift and correct for it if you are working satellites, moonbounce or doing meteor scatter. In fact, this fantasy radio system is would be so advanced that it can adapt to future modes with a simple, free software upgrade.

This fantastic rig now exists: Software Defined Radio (SDR). There is a gotcha though: some assembly is required and because it is fairly new, the learning curve can be fairly steep. However, because of the exciting capabilities it offers, a wide variety of folks have been inspired to create introductions and tutorials.

So, what is it? Wikipedia has the following to say: "Software-defined radio (SDR) is a radio communication system where components that have been traditionally implemented in hardware (e.g. mixers, filters, amplifiers, modulators/demodulators, detectors, etc.) are instead implemented by means of software on a personal computer or embedded system.[1] While the concept of SDR is not new, the rapidly evolving capabilities of digital electronics render practical many processes which used to be only theoretically possible."

https://en.wikipedia.org/wiki/Software-defined_radio

What else is good about it?

Other than adaptability for various modes and frequencies, what else is good about it?

1. SDR allows better sharing of limited bandwidth without interference.
2. SDR can more easily reject interference and pick up faint signals
3. SDR can dynamically adjust power to the minimum output as needed to maintain communications

How does it work?

Simply put, it is like a very fast computer sound card, with the speaker and microphone replaced by an antenna. Everything the antenna picks up is amplified and digitized. Next, a computer picks a signal out all the bits it collects. Computers and analog to digital converters have become so fast that this is now a practical method of demodulating most any signal. The process is reversed for transmit. Ideally, an SDR would simply connect an analog to digital converter to the antenna on receive and a digital to analog converter to the antenna on transmit. However, due to various technical limitations, this is not yet achievable. In practice, a low noise amplifier provides gain between the antenna and converter. Harmonics and other undesirable signal rejection is filtered out by a selectable filter network to keep from overwhelming the amplifier's dynamic range. Next, the resulting digital stream is processed either with a PC or dedicated FPGA.

How much does it cost to get started?

For receive only, a simple RTL SDR USB dongle costs under \$20 and typically includes an antenna. A basic transceiver starts around \$89.00 SoftRock RXTX Ensemble Transceiver Kit (\$124.00 assembled) with the HackRF coming in at around \$300. Prices and capabilities quickly go up from there. The home-brew Pic-A-Star looks rather interesting, it can be constructed from the ground-plane up from a DIY set of circuit boards and a lot of SMT soldering. Wikipedia has the most extensive list of hardware I have found:

https://en.wikipedia.org/wiki/List_of_software-defined_radios

Lastly, there is a no-cost option: the GNU Radio software project can simulate hardware in the loop and run completely in your computer. The next installment will go into a little more detail on GNU Radio, which seems to be the most flexible and capable software system available.

Find out more:

YouTube: Practical Software Radio

<https://www.youtube.com/watch?v=wqKNUXDdIvU>

https://en.wikipedia.org/wiki/List_of_amateur_radio_software

Tutorial: Creating an FM Receiver in GNURADIO using an RTL-SDR

<https://www.rtl-sdr.com/tutorial-creating-fm-receiver-gnuradio-rtl-sdr/>

Great one page tutorial for receiving coms with an RTL-SDR and GNU Radio Companion.

<http://www.instructables.com/id/RTL-SDR-FM-radio-receiver-with-GNU-Radio-Companion/>

Tutorial and a huge listing of applications

<https://osmocom.org/projects/sdr/wiki/rtl-sdr>

Using SDRPlay to build a GNU Radio based receiver.

<https://hackaday.com/2015/11/12/your-first-gnu-radio-receiver-with-sdrplay/>

Software Defined Radio with HackRF video series

<http://greatscottgadgets.com/sdr/>

This series will introduce you to HackRF One, software including GNU Radio, and teach you the fundamentals of Digital Signal Processing (DSP) needed to take full advantage of the power of Software Defined Radio (SDR).

The GNU Radio Live SDR Environment is another nice bootable Linux .iso with support for HackRF and, of course, GNU Radio.

<http://gnuradio.org/redmine/projects/gnuradio/wiki/GNURadioLiveDVD>

Pentoo is another live Linux distribution that comes with HackRF and GNU Radio support pre-installed.

<https://github.com/mossmann/hackrf/wiki/Getting-Started-with-HackRF-and-GNU-Radio>



PICTURES FROM THE HAMFEST AND BANQUET.

HENRY NEWTON, KC5WYA,

Banquet pics



The “foxes” from the foxhunt



Tailgating, silent auction, socializing and more



