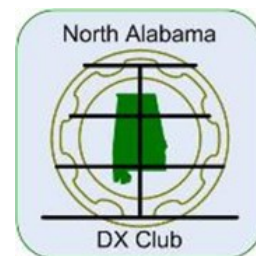


The LongPath

October 2021 — Volume 45 Issue 10

A North Alabama DX Club Publication



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From the President

By Bob DePierre, K8KI

I have to worry about what you think would be interesting every month. I don't get much help (hint). Last week, Billy Gold offered a soldering class at the HARC meeting. I thought that would be an awful idea...doesn't everyone know how to solder? Was I wrong! There was a land rush, not only to get into his class, but to be an instructor as well. He got some kits and sold them to the students. They were cool kits, and the students got to walk away with a very interesting toy. Bravo Billy. Now we need to do something like that at the DX Club. Ideas???

Last month I tasked Fred Kepner/K3FRK to head up an election committee for next year's club officers. He'll report on Tuesday. We'll vote next month, even by zoom, and install the officers at the Christmas Party in December. I hope there is some new blood out there.

In November, we'll vote on DX'er of the Year. On Tuesday we need to talk again about the Christmas Party. The pandemic has stifled so many events over the past two years.

Contest season has begun and CQ Worldwide RTTY is in the books. How many of you participated? Let's hear some scores!

The new museum environment has greatly helped me think of programs to present. But that's just me – it takes all of you to make the club really run. I need ideas. Help me out here. Volunteering a program idea that interests you doesn't necessarily make you a volunteer to present it. I've worked on programs for many members. Here's some of my ideas. Tell me if you like any of them:

- The Information Explosion, The Early Years/The 1800's, which I will present next Tuesday.
- The Life and Times of Oliver Heaviside.
- A Historical Perspective on Maxwell's Equations. Why was this important to ham radio?
- Tuned Radio Frequency (TRF) and Neutrodyne Receivers.
- The Regenerative Receiver.
- The Museum of Information Explosion by Marc Bendickson.
- Differences Between Superhet and SDR Receivers (for those who didn't see my presentation at the Ham-fest).
- The Top 30 DX Entities.
- World Events that Led to Deleting the Last 40 DX Entities.

So, let's have the next NADXC club meeting on Tuesday, October 12, at the Museum of Information Explos-

From the President (continued)

ion at 1806 University Dr. The Zoom sign-on will be exactly the same as in the past. I'll send members the Zoom invitation on Sunday just before the meeting. Again, remember to pick up your dinner on the way over. I'll get a few of you to help put up the tables and we'll just eat here. I'll open the doors by 5:45. The meeting will start at 6:30, and the program a little before 6:45.



The Museum of Information Explosion

Ionospherica

By “Kai” Siwiak, KE4PT

Ground Reflections — the rough and spherical Earth.

The tool of choice for modeling antenna patterns over ground is numerical electromagnetic code (NEC), such as implemented in several popular software packages, including *EZNEC* and *4nec2*.^{1,2} They each give excellent results as long as you are modeling your antenna in free space, or over a perfectly flat and perfectly smooth Earth.

In October 2015 Ionospherica we showed an evaluation of antenna patterns over a “medium” ground using NEC.³ That study showed that the ground affects antennas and antenna patterns in two completely independent ways. First, for low antennas, the ground affects the feed-point impedance of the antenna through mu-

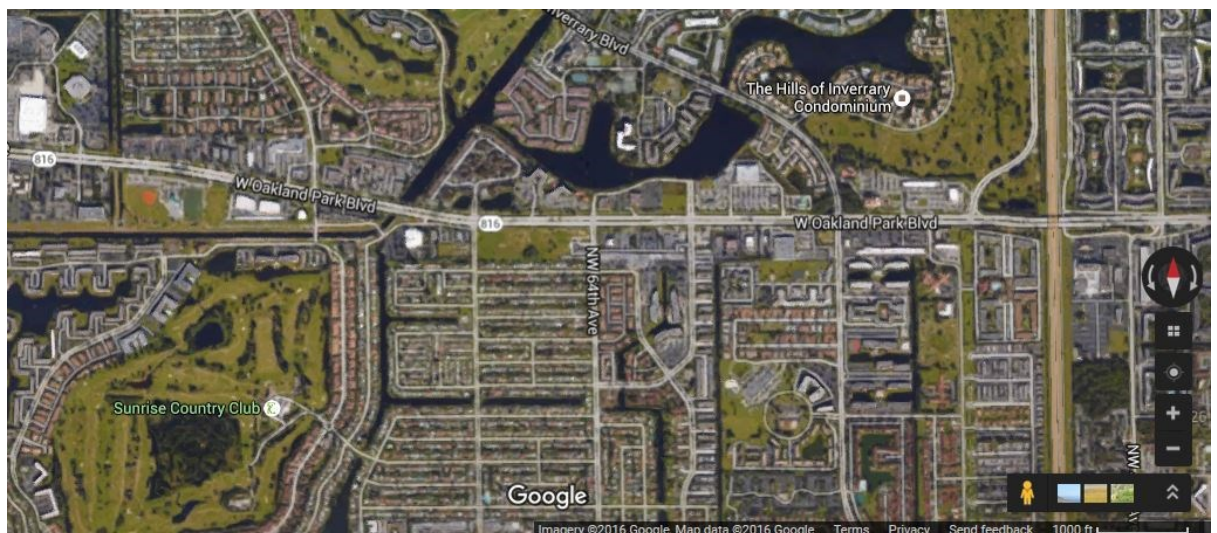
tual impedance coupling with the ground *directly under the antenna*.

Second, the reflection from the ground distant from the antenna combines with the direct signal path from the antenna. This reflection occurs *far from the antenna* for useful elevation angles to generate ground-induced pattern lobes – two lobes per quadrant for every wavelength in height above the ground. In between those lobes were very deep ground-induced antenna pattern nulls.

However, the Earth is neither flat, nor smooth – and that has a dramatic effect on the details of the antenna patterns. The Earth is rough, as depicted in the aerial view in Figure 1.

So, how does that affect antenna patterns?

Figure 1 – The Earth is not smooth, even in a region where the street level above sea level is nearly constant like this region west of Ft. Lauderdale, FL.



Ionospherica (continued)

What the NEC Models Calculate

The NEC software packages perform two functions. First, they consider the wire model of your antenna, and compute the currents in those wires by applying Maxwell's equations. If you chose to include a ground, those antenna wire currents include the mutual impedance due to the ground directly below the antenna. So far, so good.

Second, NEC software computes electromagnetic (EM) fields using those antenna currents as sources. Again, if you included ground parameters then the software includes ground-reflection EM field components, as pictured in Figure 2. The specifics are not important, but getting the distant composite EM field F can be summarized as follows.

$$F(\theta) = \text{Direct}(\theta) + \text{Reflected}(\theta) \quad (1)$$

where θ is the pattern elevation angle. The reflected path fields *Reflected* include ground reflection coefficients.

NEC and practically every other EM solver we are likely to encounter, uses reflection coeffi-

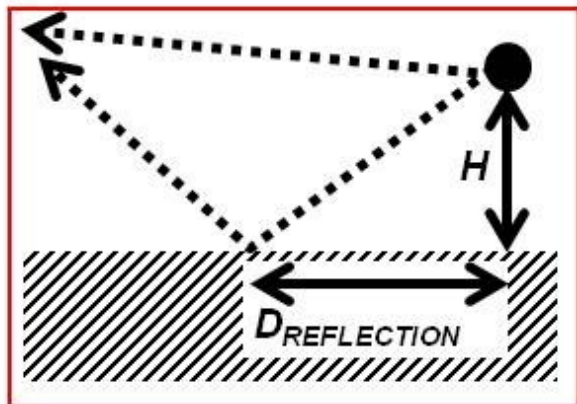


Figure 2 – The antenna pattern is a composite (vector addition) of fields traveling along a direct path and fields that are reflected from the ground.

cients– typically Fresnel plane-wave specular coefficients – that are based on a flat and perfectly smooth Earth. Why? Because it is simple to do so! Or, more precisely, it can be incredibly difficult to model a rough environment, as in Figure 1, except statistically.

We showed the results of using some propagation models that relied on a statistical description of the environment in the April 2015 *Ionospherica*.⁴

Statistical Models

Vast tracts of the radio propagation environment can be described statistically with just a few parameters, to arrive at simplified curves for propagation attenuation along urban and suburban radiowave paths. We didn't get an exact answer, but rather a median signal value along with a standard deviation of the result, consistent with the detail (or lack of it) with which we described the environment.

It is possible to modify the *Reflected* term in Eq. (1) to approximately account for a rough and spherical, specifically,

$$F(\theta) = \text{Direct}(\theta) + S(\theta)\text{Reflected}(\theta) \quad (2)$$

where $S(\theta)$ is a two part statistically-based modification to the reflection coefficient. One part is a frequency independent divergence factor derived for a spherical Earth.⁵ The second part was derived originally to describe scattering from a rough sea.⁶ The spherical divergence factor affects primarily the reflection at the very lowest elevation angles. It is purely a geometrical term involving the antenna height above ground and the radius of the Earth. It is independent of frequency. The roughness factor affects the higher elevation angles, and depends on frequency and on a roughness parameter h_{rms} .

The wavelength or frequency dependency of roughness should be no surprise. The roughness portrayed in Figure 1 involves fixed heights of buildings and foliage, whereas EM wavelengths vary with frequency. Said another way, a cluster of

Ionospherica (continued)

12 m tall (40 ft) buildings is just a fraction of a wavelength at 1.8 MHz. So the cluster may appear relatively “smooth” at that frequency. In the 2 m band however, those buildings are tens of wavelengths tall. The cluster appears very “rough” in the 2 m band. That frequency dependency of the roughness parameter is evident in Figure 3

Accounting for a Rough Spherical Earth

Parameter h_{rms} was derived to represent the standard deviation of ocean waves, or about 0.25 times the wave crest to peak height. In applying this to buildings and foliage, $h_{rms}=3$ would represent the standard deviation of buildings and foliage with a median height of 12 m.

Figure 3 shows the combined spherical divergence and roughness factor $S(\theta)$ computed for an environment of 12 m tall buildings. $S(\theta)$ reduces the ground reflection contribution, making ground reflection nulls and pattern lobe peaks less pronounced.

Effect on Antenna Patterns

Antenna patterns computed by NEC have excessively deep ground-induced nulls, as do the

analytical pattern for a smooth flat Earth, as seen in Figure 4. Analytically including a roughness parameter appropriate to a suburban environment reduces the reflection coefficient amplitude, and consequently reduces the ground induced pattern nulls.

References

1. EZNEC antenna modeling software, Roy Lewallen, W7EL, www.eznec.com.
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3. K. Siwiak, KE4PT, “Ionospherica, Ground Influence — It’s not a property of the antenna”, *QRPQ* Vol 56 No. 4, Oct 2015.
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5. K. Siwiak, KE4PT, “An Optimum Height for an Elevated HF Antenna”, *QEX*, May 2011, p 32-38.
6. See Eq. (2.46), Chapter 2, Editor M. Skolnik, *Radar Handbook*, McGraw-Hill, 1990.

Kazimierz (Kai) Siwiak, KE4PT, is an avid DXer who packs a DX Go-Bag station on his travels.

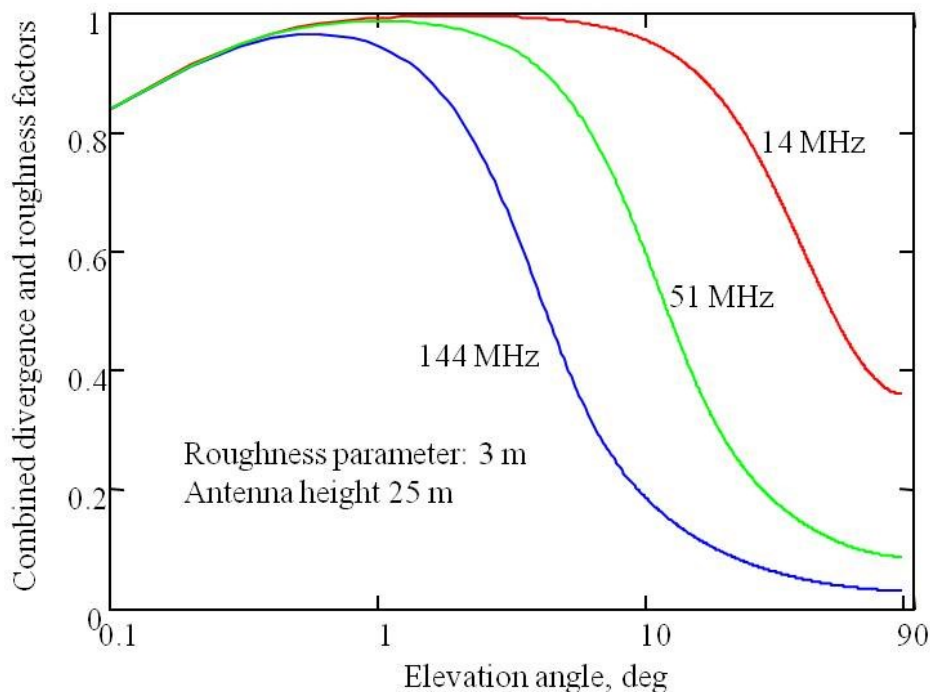


Figure 3 – $S(\theta)$ for an suburban area similar to Figure 1. The dip for angles below one degree is due to the frequency independent spherical Earth divergence factor, the frequency dependent behavior above a degree accounts for Earth roughness.

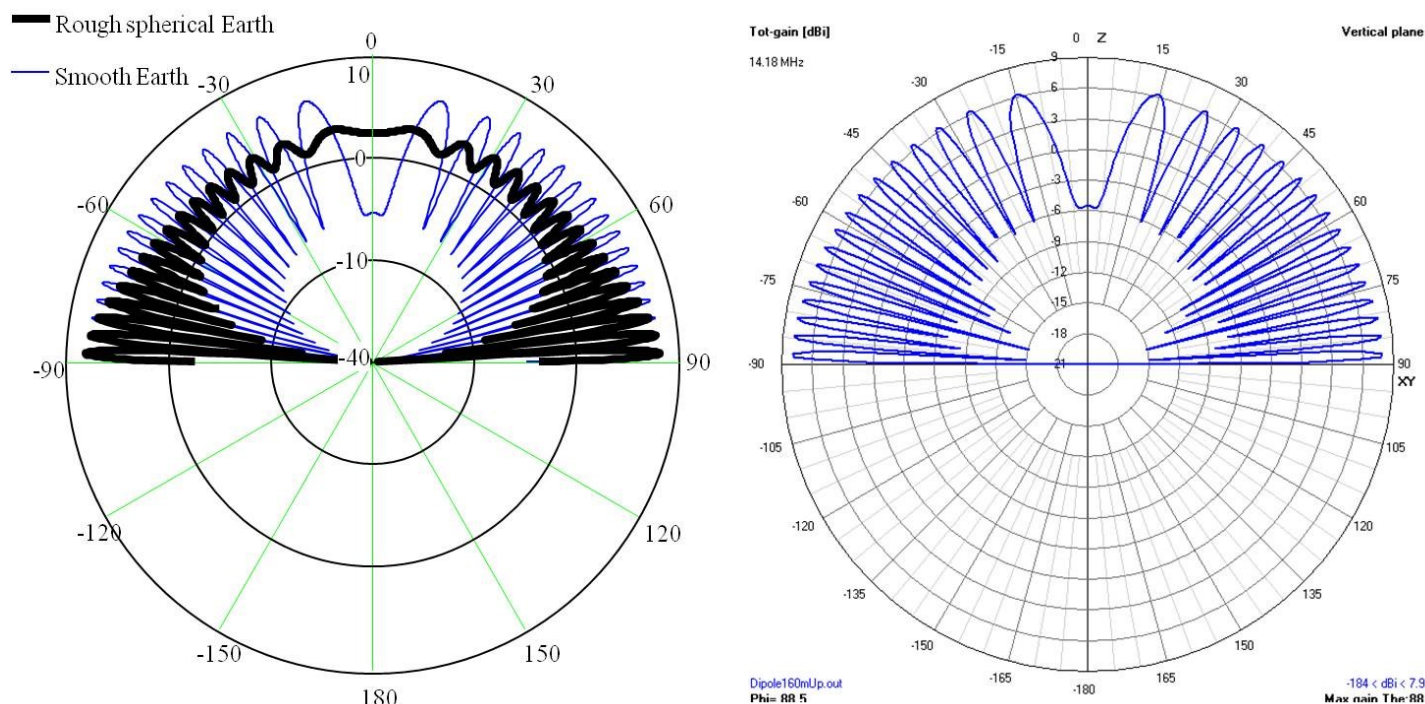


Figure 4 – The right side pattern shows an NEC calculation of a dipole 8 wavelengths above the Earth. The left patterns are analytical results for (thin line) a smooth Earth that matches the NEC calculation, and (thick line) for a rough Earth.

A Brief History of Time (and Amplifiers)

By Larry Crim, K4AB

I've been licensed for a long time. Since 1973. And, I've used a lot of amplifiers over that time.

The first amp was a homebrew HF amp using a pair of 4CX-250B's loaned to me from one of my elmers, Frank, W4HFU. It had no high voltage supply and was crude, to say the least. In an effort to get it working, I built a small HV power supply using some scrounged diodes, resistors, capacitors, and a transformer from Tom, N4KG. I was in high school at the time and hid the supply under my bed. If my mother had only known what was under there.

Over the years, a litany of HF amplifiers followed: Heathkit SB-200, SB-220, Dentron Clipperton-L, Amp Supply LK-500, Kenwood TL-922, Ameritron AL-1500, and Acom 2000a.

I broke them all.

As many of you know, the majority of my operating revolves around contesting. I operate hard, usually involving quite a bit of transmitting.

I hit the F1 button. A lot. It also means that I have numerous antennas. High and low. Big and small. And since I do both CW and SSB, I use most of each available band. Many antennas do not cover the entire band with a less than 1.5:1 VSWR. Furthermore, contesting involves quite a few late-night hours, with very little, if any, sleep. Hot-switching or transmitting into the wrong antenna occurs frequently. That's how I broke most of the above amplifiers.

The SB-220 didn't have 160 meters. I fried the band switches on the Clipperton-L, LK-500 and TL-922. I killed the AL-1500 with overdrive. The ACOM would trip if the VSWR inched too high. And so on. What was one to do?

A Brief History of Time (and Amplifiers) (continued)

I began to do an informal poll of fellow con-testers. Especially the amateurs who operated vigorously. Especially those who operated RTTY and its high duty cycle. Especially some of the big multi-operator stations like HC8N and PJ2T. I looked at shack photographs in the magazines to see what they were running. I asked for recommendations on the AMPS reflector. Somehow, I noticed the Ameritron AL-1200. In speaking with several of these guys the one word that many used was “tough”. It was originally designed by Tom, W8JI, who is well respected.

Luckily, one day while looking through the advertisements on QTH.com I found an amateur in Alabama who was selling everything he had. He was leaving the hobby. And, he had an older AL-1200 for sale at a below market price. This was in 2004, or so. The amp was, at least, 10 years old at that time.

It was, on first blush, husky. And the 3CX-1200A7 had a reputation as a very forgiving tube. In contest after contest, over years, over countless times of abuse, it continues to perform. The only failures have been age related: The T/R switch has been replaced, as have the filter capacitors.

Otherwise, it has never complained. The bandswitch remains pristine. The tube which still produces 1500 Watts with less than 100 Watts of drive power is likely now well over 25 years old.

Being a two radio, single operator guy, I purchased another new AL-1200 about 10 years ago to go on my second radio. It, too, has operated flawlessly. No repairs whatsoever.

Now, there is no such thing as a “perfect” amp. The AL-1200 has its disadvantages. The blower IS loud. Some have described it as a jet engine sound. There is a way to lower the blower speed, but I don’t want to compromise the cooling for the sake of background noise. Plus, I’m always wearing headphones when operating.

The AL-1200 is manually tuned. But most “no-tune” amps I’ve looked at, including the Acom, will fault when faced with the wrong antenna, a less than perfect VSWR, or the 3 A.M. operator mistakes. The last thing I need is to wait through another 180 second warm-up period before transmitting again. Like most guys, I’ve placed index cards behind the TUNE and LOAD controls to quickly change bands. And the amp can easily handle a less than perfect VSWR. As Billy, AA4NU once told me, his AL-1200 is the best 1500-Watt antenna tuner he’s ever had.

Another disadvantage is the tube. Years ago, the 3CX1200A7 was fairly plentiful. However, since then, the supply has become scarcer and, when found, can be quite pricey. Ameritron has replaced the tube in its newer amps with the 3CX1200Z7. It will be difficult and expensive to replace the tube if it fails. But with its history of durability I hope it will outlast the operator.

In all fairness, I have never tried amplifiers made by OM Power, Emtron, Henry, Alpha, etc. The Alpha 87A was on my list years ago, but the problems with its PIN diodes and serviceability made it less desirable. If the AL-1200 should develop a problem I can’t handle, I can just put it in the car, and drive to Starkville. Unlikely, since it’s actually a very simple amp. A power supply, and RF section basically.

All amplifiers have pluses and minuses. It really depends on operating style and preference. But the reason I chose the AL-1200 is simple.

I can’t break it.



K4AB's pair of AL-1200s

Unexpectedly Good Luck with a New Product

By Bob DePierre, K8KI

I could never figure why my Flex radio would have various difficulties over the years since 2013. I went through several, of which I thought were top end i7 computers. But the problems remained. They all got fixed in time, but it became more and more obvious that the problems lay in the computer and operating system, and not the radio.

Frustrated, I gave them all away (famously drug to the curb), and decided to try a new Dell laptop. The problems promptly and totally disappeared. Talk about happy!! But there was another component that I think made a major difference. It was the docking station. I've had it over a year now. The capabilities of docking stations have grown over the years. My unit is the model

WD19TB. It powers a whole array of peripheral devices: 2 display ports, HDMI, a couple of USB Gen 2 Type C ports and a three Gen 1 ports, an RJ45, and a Thunderbolt Type C with power share! These include a number of connectors I had never heard of, but I soon found out. They're all faster than anything I had used before. I quickly adapted to the new connectors. The docking station looks like a porcupine with all the interfacing cables, and it's well out of my field of view. Now there is only a single wire touching my laptop. If I want to shield it from lightning, or take it somewhere (like to a NADXC meeting) then there is only one wire involved. This is really smart. The laptop is now far more useful. If you are looking for a new computer, I recommend you look at this or a product like it.



Front and back view of the Dell WD19TB docking station

Diversity Reception with the TS-990

By Mark Brown, N4BCD

The ability to hear weak signals on HF has always been a challenge due to band noise and fading, and as hams we try to mitigate that by building the best station and antennas that money and time will allow. I'll describe here what I do to try to dig that weak contest multiplier or DX station out of the noise. First, I'll describe the radio architecture, then my antenna system, and finally describe how I use it.

The Kenwood TS-990's main receiver is down-converting with lots of front-end bandpass filtering and DSP for IF and audio. The sub-receiver employs the up-converting format of Kenwood's TS-590 radio but utilizes the same front-end filtering as the main receiver when tuned to the same band. While these unequal signal paths are not on par with some Elecraft, Flex, or Anan radios offering true parallel signal paths, the front

Diversity Reception with the TS-990 (continued)

panel controls of the 990 afford the operator the opportunity for diversity reception.

The 990 features 4 antenna inputs with a separate RX antenna input. A shortcoming in that when the RX antenna input is utilized it's mapped to both receivers. This is overcome by putting the receive antenna on an unused main input. In my case, care must be exercised to not transmit into ANT4 when operating split. Thanks to the radio's 135 knobs and switches on the front panel, filter widths and skirt shapes, AGC, and noise reduction on each receiver are completely independent. Through stereo headphones, the main RX comes into the left ear and the sub-RX arrives in the right ear. A menu setting in a setup screen allows the amount of "blend" between the two sources, so one can tailor the effect from fully discrete chan-

nels to blended mono. Personally, I set the blend 3 of 10 clicks away from fully discrete.

A little about my antennas. In the front yard I have a 300' Beverage aimed roughly NE. Running above it and perpendicular is a 130' ladderline fed doublet at 60' to a Palstar tuner. In the backyard and several hundred feet away is my 65' tower with a tri-bander and sloping dipoles off the top for 40m and 17m. All the tower antennas are switchable through a remote DXE antenna switch.

Depending on the band I'll use a combination of front and backyard antennas in an attempt to hear a weak signal – understanding that sometimes a short element high in the air or a long wire with a lobe hears the arriving signal better than the TX antenna I'm using. Sometimes the effect is dramatic and other times fruitless. Being able to do it is where the fun and reward is. More antennas would probably equal more fun.

Diversity Reception By Chris Reed, AI4U

Last month Bob asked "did any one have a diversity radio?" I raised my hand and proudly stated "two". Bob requested articles for the Longpath about our experiences with diversity.

In fact I do have two of these wonderful radios and use them on the air frequently with great success I might add. Some argue that the radios I use don't really qualify as true diversity. I suppose they are correct, technically speaking of course.

The text that follows is an excerpt from an article about mine and many others radio receivers. The manufacturer will be revealed in due time. Diversity refers to the general principle of using multiple (usually two) antennas to take advantage of the very low probability of simultaneous drop-outs at two different antenna locations. "Different" means that the signals are statistically independent at each location. This is also sometimes called "space diversity," referring to the space between the antennas.

For radio waves, this "de-correlation" is a function of wavelength: a separation of one wavelength results in nearly complete de-correlation. In most cases, at least one-quarter wavelength separation between antennas is necessary for significant diversity effect: about 40 cm for VHF systems and about 10 cm for UHF systems. Some increased benefit may be had by greater separation, up to one wavelength. Spacing beyond one wavelength does not significantly improve diversity performance, but large or unusually shaped areas may be covered with greater antenna separation. (my comment here: ever heard of a repeater voting system with multiple receivers?). Back to the article....

There are a number of diversity techniques that have had some degree of success. The term "true" diversity has come to imply those systems which have two receiver sections, but technically, any system which samples the radio field at two (or more) different locations, and can "intelligently" select or combine the resulting sig-

Diversity Reception (continued)

nals is a true diversity system.

The simplest technique, called "passive antenna combining" utilizes a single receiver with a passive combination of two or three antennas. Antennas combined in this manner create an "array," which is essentially a single antenna with fixed directional characteristic. In its most effective form (three antennas, each at right angles to the other two) it can avoid complete dropouts, but with a reduction of maximum range. This is because the array output will almost always be less than the output of a single antenna at the optimum location. If only two antennas are used,

dropouts can still occur in the event of an out-of-phase condition between them. Cost is relatively low, but setup of multiple antennas can be somewhat cumbersome. This is not a "true" diversity design. (See Figure 2-20.)

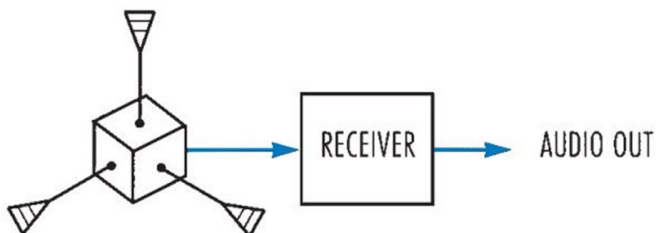


Figure 2-20: passive antenna combining

A true diversity variation of this technique is "antenna phase diversity." It also employs two antennas and a single receiver but provides an active combining circuit for the two antennas. This circuit can switch the phase of one antenna relative to the other, eliminating the possibility of phase cancellation between them. However, switching noise is possible as well as other audible effects if switching is incorrect. Range is sometimes greater with favorable antenna combinations. Cost is relatively low. Setup requires somewhat greater antenna spacing for best results. (See Figure 2-21.)

The next variation, "antenna switching diversity," again consists of a single receiver with

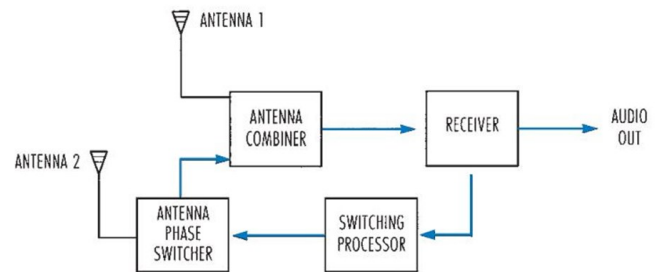



Figure 2-21: antenna phase switching

two antennas. The receiver includes circuitry that selects the antenna with the better signal according to an evaluation of the radio signal. Switching noise is possible but this system avoids the possibility of phase cancellation between antennas because the antennas are never combined. Range is the same as for a single antenna system.

So, you see as mentioned in above example of a repeater voting system falls under "antenna switching diversity." But alas, this has far reaching applications in many receiver systems.

Now for the model and capability of my receivers. As the article stated, the cost of these are "relatively low" at about 350 dollars each. This wonderful transceiver with its two antennas offers the best fidelity too.

Anyone who has had dealings with many microphones are familiar with this manufacturer.

The manufacturer is Shure microphones. Yes, I have two different models both in the frequency range of 512-542MHz. They are the wireless microphone  and its receiver. Shure makes this in different band segments in the VHF and UHF bands. See the pictures below and you will notice the "dual" antennas that receive the signal. These receivers "vote" between each other very quick so as to receive the best signal.

The model pictured is an analog model similar to the units I own. Many thanks to Shure for their wonderful products and excerpts from their article on diversity.



Shure BLX4 Receiver

Upcoming DX Contests

By Chuck Lewis, N4NM

Scandinavian Activity Contest, (SSB) 80-10 meters

Oct. 9, 1200Z to Oct. 11, 1200Z

Exchange: RS & Serial No.

See page 75, Oct. QST and <http://www.sactest.net>



UBA ON Contest, CW, (CW), 80 Meters

Oct. 10, 0530Z to 0800Z

Exchange: RST, serial No., ON section (if any)

See page 75, Oct. QST and <https://www.uba.be/en/hf/contest-rules/on-contest>

JARTS WW RTTY Contest, (RTTY), 80-10 meters

Oct. 16, 0000Z to Oct. 17, 2400Z

Exchange: RS(T) & op's age

See page 75, Oct. QST and www.jarts.jp/rules2021.html



Worked All Germany Contest, (SSB & CW), 20-10m

Oct 16, 1500Z to Oct 17, 1459Z

Exchange: RS(T) plus serial number or DOK code

See page 75, Oct. QST and www.darc.de

Asia-Pacific Fall Sprint, (CW), 15 & 20 meters

Oct. 17, 0000Z-0200Z,

Exchange: RST plus serial number

See page 75, Oct QST and www.jsfc.org/apsprint

Stew Perry Topband Challenge, (CW), 160 meters

Oct. 23, 1500Z to Oct. 24, 1500Z

Exchange: 4-character grid square

See page 75, Oct. QST and www.kkn.net/stew



CQ World Wide DX Contest

CQ WW SSB, (SSB), 160-10 meters

Oct. 30, 0000Z to Oct 31, 2359Z

Exchange: RS & CQ zone

See page 75 Oct. QST and www.cqww.com/rules.htm

OTHERS:

Russian WW **Digital** Contest, 1200Z, Oct 2 to 1159Z, Oct 3

UBA ON Contest, **SSB**, 0600Z-0900Z, Oct 3

WAE DX Contest, **RTTY**, 0000Z, Nov 13 to 2359Z, Nov 14

Dates & times often change or are misprinted in the journals; beware. Also, check the cluster: "sh/contest". Have fun!

DXpeditions in October 2021

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Start Date	End Date	DXCC Entity	Call	QSL via	Info
2021 Oct02	2021 Oct16	Mauritius	3B8	M00XO	By G0VJG as 3B8/G0VJG; SSB + digital, some CW; 100w, vertical, dipole; QSL OK via Club Log OQRS
2021 Oct03	2021 Oct09	Market Reef	OJ0WS	LoTW	By OH0WS; HF; CW; QSL via OH3WS Buro
2021 Oct08	2021 Nov03	French Guiana	FY	LoTW	By KC5CW as FY/KC5CW fm multiple locations; 160-6m; SSB PSK FT8 (Fox and Hound), perhaps slow CW; 100w
2021 Oct01	2021 Oct30	Mozambique	C92R	LoTW	By IV3FSG; 80-10m; SSB + digital; spare time operation; QSL to IK2DUW direct; exact dates unclear
2021 Oct02	2021 Oct16	Sao Tome & Principe	S9OK	LoTW	By OK1BOA OK1CRM OK1FCJ OK1GK OK2ZA OK2ZC OK2ZI OK6DJ fm Sao Tome I (IOTA AF-023); 160-6m; CW SSB + digital; QSL via Club Log OQRS or OK6DJ
2021 Oct07	2021 Oct21	eSwatini	3DA0RU	LoTW	By R7AL RA1ZZ RW9JZ OK8AU R5EC SP6EQZ fm KG53pk; 160-6m; CW SSB FT8 (fh); QSL details on Web page
2021 Oct09	2021 Oct22	Guinea Bissau	J5T	LoTW	By 7 op l team fm Bubaque I (IOTA-AF-020); also using J5HKT; 160-10m; CW SSB RTTY FT8; 4 stations; QSL via I2YSB direct
2021 Oct10	2021 Oct21	Canary Is	EA8	DL4FO	By DL4FO as EA8/DL4FO/p fm La Gomera I (IOTA AF-004); 40-10m; mainly CW, perhaps SSB; 5-40w; SOTA and WWWF activity; QSL B/d
2021 Oct12	2021 Oct19	Luxembourg	LX	LoTW	By PA0PIW as LX/PA0PIW, PA2LO PA3EYC PA3GRM PE1KWH likewise; 160-6m; CW SSB RTTY FT8; QSL via PA3EYC Buro
2021 Oct12	2021 Oct20	Surinam	PZ5ZS	LoTW	By PF9Z @PZ5JW (GJ25io); 80-10m; SSB; 500w; Hexbeam; QSL via PF9Z
2021 Oct12	2021 Nov01	Svalbard	JW6VDA	LoTW	By LA6VDA fm IOTA EU-026 (JQ78tf); HF; SSB; QSL via Club Log OQRS
2021 Oct15	2021 Oct18	Surinam	PZ5G	LoTW	By DJ4EL PF9Z PZ5LW fm Houttyn (Papegaaie I, IOTA SA-092); 80-10m; SSB CW; QSL via DJ4EL
2021 Oct18	2021 Oct23	Sint Maarten	PJ7JA	LoTW	By W5JON; 40-6m SSB FT8; QRV for CQWW DX SSB; QSL also OK via W5JON direct
2021 Oct24	2021 Nov19	Gambia	C5C		By F5NVF; HF, incl 60m; CW SSB; 100w
2021 Oct24	2021 Nov01	St Eustatius	PJ5	LoTW	By W5JON as PJ5/W5JON; 40-6m SSB FT8; QRV for CQWW DX SSB; QSL also OK via W5JON direct
2021 Oct24	2021 Nov19	Gambia	C5C		By F5RAV; 40-10m; CW SSB; COVID permitting
2021 Oct25	2021 Nov06	Bahamas	C6AHB	LoTW	By NN2T + others fm Bimini I (IOTANA-048, FL05ir); HF; SSB + digital; QRV for CQWW DX SSB; QSL via NN2T, Club Log OQRS
2021 Oct26	2021 Nov07	Galapagos	HD8R	EA5RM	By EA5RM EA1SA EA5EL EA5KA EA5KM EA7R EA7X F5CWU F5NKX F8ATS HC5VF HK6F IK5RUN IN3ZNR; 160-6m; CW SSB FT8 RTTY



Introduction

By Fred Kepner, K3FRK

I have to admit, I am addicted to power supplies. If a power supply catches my attention at the Hamfest flea market, I can walk away, but I'll probably soon return. I have way more power supplies than radios. Most of them sit in my cabinet, waiting for a new project. The truth is, a quality power supply is not very expensive and will last a long time. My stockpile will likely never be used, just moved out to make room for a future Hamfest "must have". I hope you enjoy this month's feature as much as I have.

AC4G Basic Power Supply Design

By Bruce Smith, AC4G

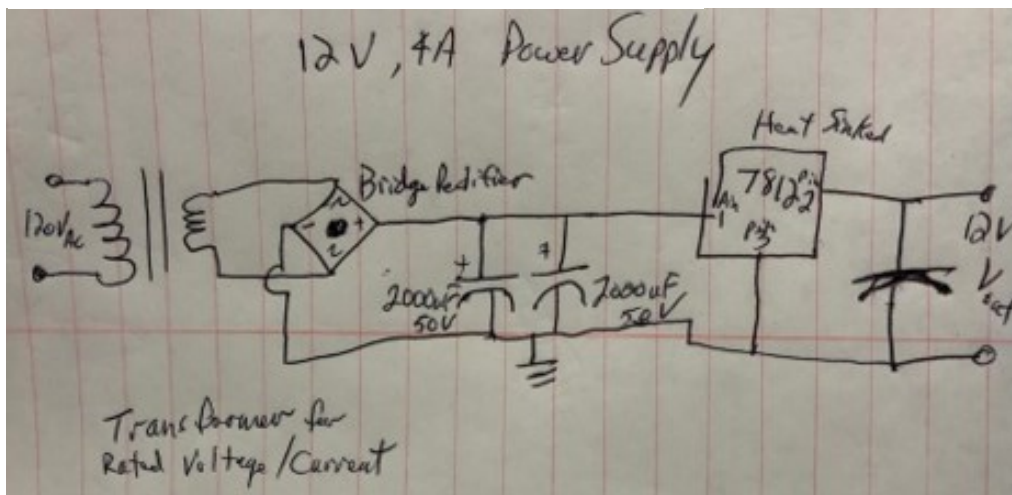
Back in the 1980's and after graduating from the university, I began building my ham station at my new residence in southern Tennessee to get on the air and work some DX. As we all know, power supplies are used for a host of electronics in the ham shack. Back in those days, a ham either bought a power supply for their needs from only one of a few vendors or designed & built their own from components in their junk box. For my station, I needed an extra power supply to sup-

ply 12 Volts at approximately 1 amp to power a MFJ iambic keyer for contesting, while another was needed to power another ham component. I decided to design this supply to provide 12 Volts DC at 4 Amps.

My first power supply consisted of a large enough transformer to supply 5 amps at 18 Volts alternating current (AC). I also needed to regulate the voltage from 18 VAC to 12 Volts DC with a bridge rectifier and voltage regulator. It also includes some basic filtering to eliminate ripple from the power supply. In order to get the 24 Volts AC converted to direct current (DC), I elected to use a 7812 voltage regulator which was a common component back in those days that provided low amperage. Reference my schematic in Picture 1 – AC4G Basic Power Supply.

After buying the voltage regulator, power indicator light (120 VAC) and a metal box to house the power supply board and laying out the other components from my junk box such as power jacks to be drilled and installed on the housing box, capacitors, etc., I began component placement on a PC board and soldering components according to the power supply design as shown in Picture 1. It took one or two evenings to complete the assembly and cut the necessary holes for the power indicator light, power jacks (+/-), power switch, and power chord. The third evening was enough time to complete assembly and complete the project.

Finally, I was able to test my newly designed power supply on the fourth evening. I plugged in the unit, turned on the power switch and measured 12 Volts DC on my multi-meter. Afterwards, I connected my power supply output to my oscilloscope to measure ripple. The ripple was sufficient for my needs. After



AC4G's Power Supply Schematic

AC4G Basic Power Supply Design (cont.)

many years, I have forgotten the exact measurement, but at the time it was very satisfactory and power supply performance was exceptional to power my keyer and put me on the air during the major ham radio contests.

Today, there are so many manufacturers of power supplies that it is much cheaper to buy a supply than build your own. However, if you want to learn about electronics, designing and building your own power supply can educate you very well and give one an opportunity & experience drilling and assembly of your projects. Many of the boat anchors of the past are sitting on shelves today only to have been replaced by modern, smaller switching and/or linear powers supplies. Since power supplies are a necessity for the ham operator's ham station, building a power supply can allow a ham radio operator the best opportunity to design & build their own electronics, educate them in project assembly, and build confidence to the ham to design and build more technical electronic projects for use in the shack. I learned a lot by building my first power supply and got a boost of adrenaline when it worked like it was designed to do. I was proud to have my power supply as a part of my new station in early-1980.

Some of My Experiences with Power Supplies

By Bob DePierre, K8KI

Over the past 60 years or so, I've had the opportunity to meet more than a few power supplies.

It may be strange, but, as many problems as I've had with switchers, I've never had one fail on me. I've found the hard part with the switchers is just getting them to work in the first place. My problems with them have only been in the design phase. You may have heard that switchers can generate lots of noise in your receiver, which is

quite true, and I've seen it. But that was in projects still in design. Those I had to fix, but my general approach was to choose the highest switching frequency I could stand. I'd try to get a switching frequency that was higher than my highest op frequency; harmonics luckily don't multiply down. But that's a little tough to do if you want to cover all of the hf bands. Before you buy a switcher, you might ask what is the switching frequency.

I now use an MFJ-4225MV. This unit is rated at 25 amps, and I have it loaded with my entire ham shack. Since I normally use an amp with pretty high gain, I rarely have to run my transceiver all the way up. The supply has never complained about overload. Since this is a quite inexpensive supply, I expected I'd at least have small problems with birdies in my receiver. So, I decided to run a test and see just how bad the interference was. I connected a strong battery in parallel with the supply, and alternately turned the supply on and off, so the battery alone could power the load. My radio, a Flex 6500, has a spectrum display on my 24" monitor. Birdies can't hide from me on this puppy; the display is absolutely gorgeous. I watched the display on both 40m and 20m. I could see plenty of birdies at my QTH location. But as I turned the supply on and off, the display never changed. All of those birdies were due to sources other than the power supply! I was astounded. I have far too many electronic devices at my QTH, but none of that interference was due to the MFJ supply. Would I recommend this supply? Yes, especially since it has both volt and am-meters. I'd also recommend you parallel a strong battery with your own power supply and run your own tests at home. Your results may vary.

I've also run analog power supplies over the years. Lots of them. Failures were rare, but they did occur. I've had to repair 4 of them for friends just this year. I found them more difficult to repair than I should have. They're big and

Some of My Experiences with Power Supplies (cont.)

heavy, and many of them try to squeeze components into very small spaces. My fingers were my biggest limitation. I just couldn't reach the components easily. And I paid the price with damaged fingers. You just don't have this sort of problem with switchers since they all use surface mounted components (SMD). You may be hesitant to work on SMD boards, but I'm not; I can measure the components and pull them out much easier than point-to-point wiring. And I haven't had the problem of fitting replacements into position.

MightyLite: Small Power Supply with a Lot of Power

By Mike Werner, KF4BOG

When you think of power supplies you think of something big and heavy. There are all kinds of power supplies big and small. Some lightweight and some heavy. But no matter which power supply you look at they all do one thing and that's put out power. The MFJ MightyLite switching power supply with a 25 Amp rating is one of the best power supplies you could ever buy. As you can see in the picture the MFJ-4125 may be small weighing only 3 pounds, but it puts out a good amount of power for just about any radio. I use it on my 50 watt FM mobile radio that I use as a base station.



MFJ-4125 MightyLite Power Supply

You can use several different types of connectors with this power supply. The two connectors you can use are banana connectors or what I like to call the screw type in the front. In the back

you can modify the push connectors to Anderson Powerpoles to make it work for your radio. The two sets of connections in the back that use Powerpoles can power two radios. In the front you could put a third radio but I would not recommend it.



The MFJ-4125 has two sets of rear Powerpoles

Another nice thing about this power supply is the fan to keep the unit cool during hard-core use periods. Gigaparts currently has this power supply priced at \$104. If you look at the price from Ham radio Outlet, you'll notice that they have the same power supply for \$114.

To install Powerpoles on the radio using the back connectors you have to use a special crimping tool. The tool is about \$40 and available at Gigaparts.



A Powerpole crimping tool is available at Gigaparts

So, you might be asking yourself is this power supply worth the purchase. If you're like me and have a station with just one or two radios it's well worth it. But if you have a big station with a lot of radios, I would buy more than one if your radio is over 100 watts or use two radios with 50 W each. Other power supplies come with the Powerpoles and some of them will not. They may come with another type of connector which to me is harder to use and as a matter of fact may not be worth using. You can buy the Pow-

MightyLite: Small Power Supply with a Lot of Power (cont.)

erpoles and have someone install them for you.

The power supply I had before this one was a big and heavy linear power supply. It put out a lot of power, but you can only use one radio with it because of the single banana jack output. I remember the very first power supply that I had. It was a small linear power supply but still heavy. If I remember correctly it put out about 7 amps and you could only run your radio on low-power. That's when I upgraded to the bigger linear supply which was over 15 pounds. I don't remember how much it put out, but it was about 20 Amps and you could run your radio on high power. On top of that it didn't have a cooling fan. So when it got hot it stayed hot. The newer switching power supplies have cooling fans in them which is good because it helps cool them down.

So you might be wondering should I get a power supply with or without a meter. Well, it all depends. If you're looking for a power supply that you can connect and see what your power level is, then a current/voltage meter included in the power supply is the one for you. But if you're not worried about that, then I would go with the one without the meter. But again it's all in what your use to.

A Brick with a Switch

By Mark Brown, N4BCD

When I got back into the hobby about a dozen years ago, I needed a 13.8V power supply to power a 100W HF rig and a 2M mobile unit. My purchasing criteria was simple – low noise and reliable. Low noise drove the choice to analog over switching. Reliable meant I didn't need lighted meters to tell me it was working or fretting over a burned-out bulb. The Astron RS-35A checked all the boxes and is still loafing along years later; still making that satisfying THUMP when I hit the switch at the top of the input sinewave.

A Wayback Power Supply

By Chuck Lewis, N4NM

Many of you saw the program that Bob DePierre, Tom Duncan, & I put together for last month's meeting. It was the first of several planned to highlight the progression of receiver architectures over the past hundred years. That program featured a crystal set that needed no power other than what it captured from the RF signal itself. But the next program will delve into receivers that use tubes. We will be bench testing each of those targeted receivers, so we'll need power supplies to make them play.

Those old radios were intended to be powered by batteries and they differed in their requirements. Tubes in those older sets were almost always triodes, and for years there was one basic amplifying tube, the "01" and its variations. These tubes used directly heated cathodes that required 5 volts DC (the "A" supply). The variations (01-A; CX-01-A; UX01-A; UV01-A; and the corresponding 02 series) differed mostly in the current drawn by those filaments (directly heated cathodes) ... typically .25 Amps each for the later versions. Otherwise, the different prefixes designated the tubes' manufacturers. Plate voltage (B+) could be anything from 45V to 90V and more. Some sets required a bias supply ("C"), and some used a lower plate voltage on the detector tube ("C+"). The "C" supply was typically anywhere up to 22VDC. Back then, batteries for those voltages were readily available from the corner hardware store. There was a lot of variation in the way the batteries and their intermediate voltage taps were interconnected.

But in the modern era, where proper batteries for old radios from the 20s to the 40s are rare, you'll need to have a flexible AC driven "battery eliminator" with at least three isolated and independent supplies that will substitute for the bevy of batteries and hookups the old-timers used. Fortunately, there are/were several available already built, including at least one kit. In my case I used parts from a kit to build a nice one that we can use to bench test a few oldies.

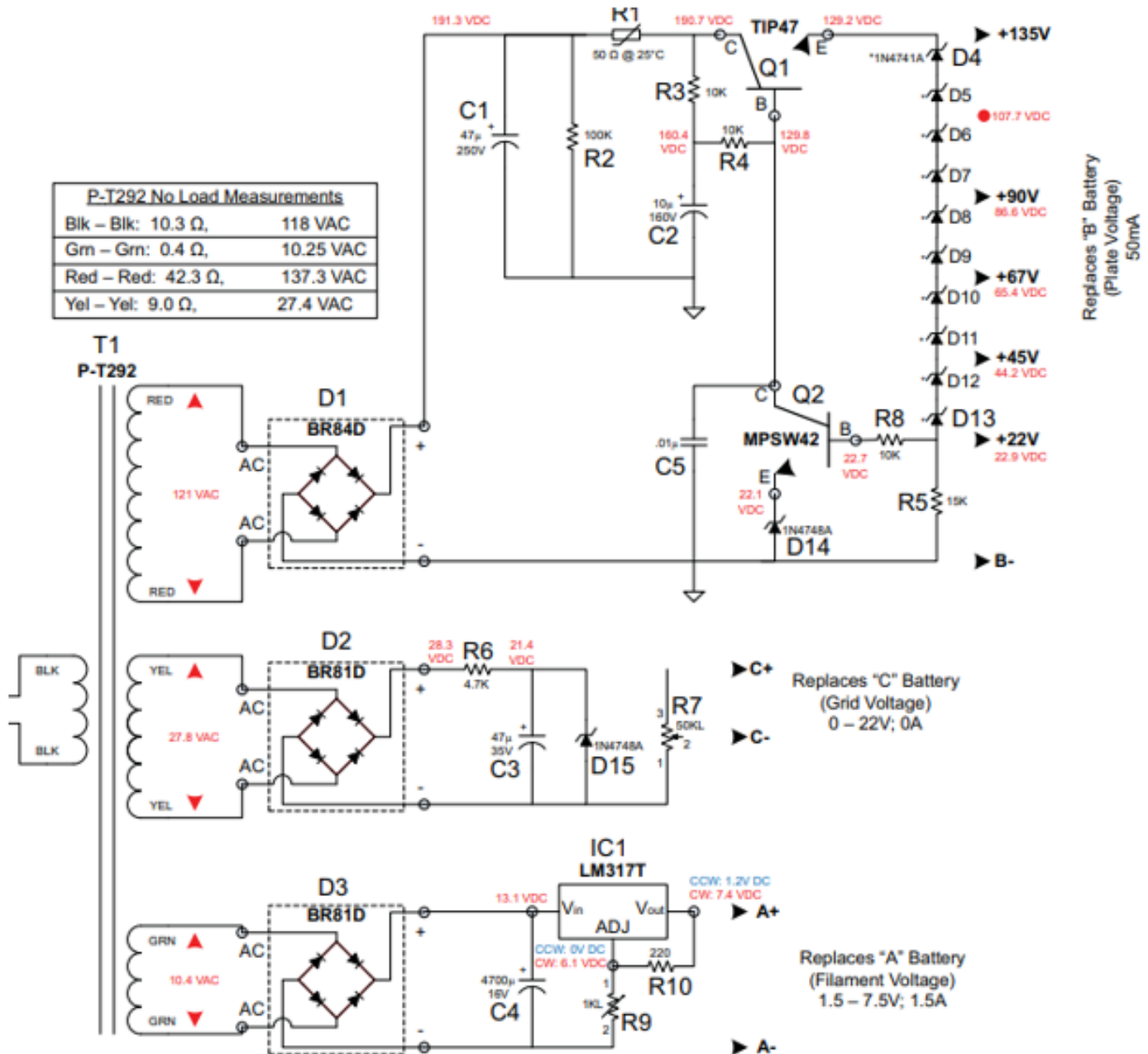
My brother, Paul, W8REG, had a kit for a

A Wayback Power Supply (cont.)

few years that was produced by Antique Electronic Supply, but never got around to building it. I persuaded him to send it my way, and I built the parts, originally intended to be “breadboarded” on a real wood base, into a modern cabinet. The filament (A) and plate (B) supplies are regulated while the C supply is a simple rectifier/filter circuit

with a voltage divider to provide a 0-22VDC output. The filament supply uses a linear regulator and trim-pot for 1.5 – 7.5VDC at 1.5A. The B supply uses a two-transistor regulator and a Zener diode string to give five discrete output voltages: 22, 45, 67, 90, and 135. Each supply uses a dedicated secondary winding on a nice power transformer that is still available from several sources.

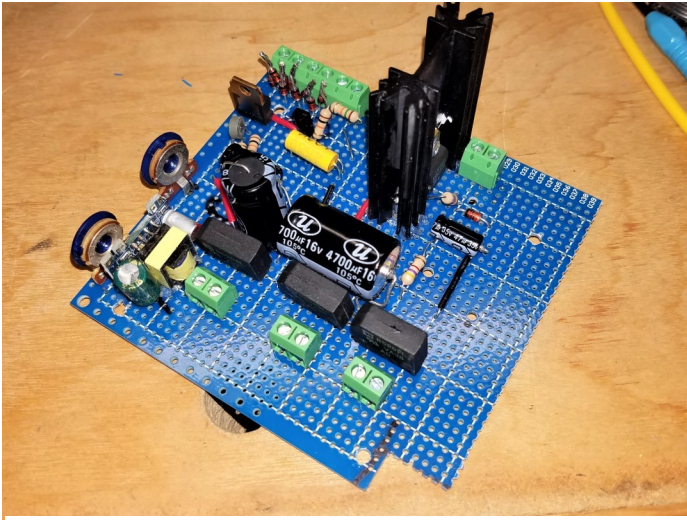
I used a perforated proto-board and stuffed the parts onto it with the two trim-pots on the back edge so they can be adjusted through the



Antique Electronic Supply

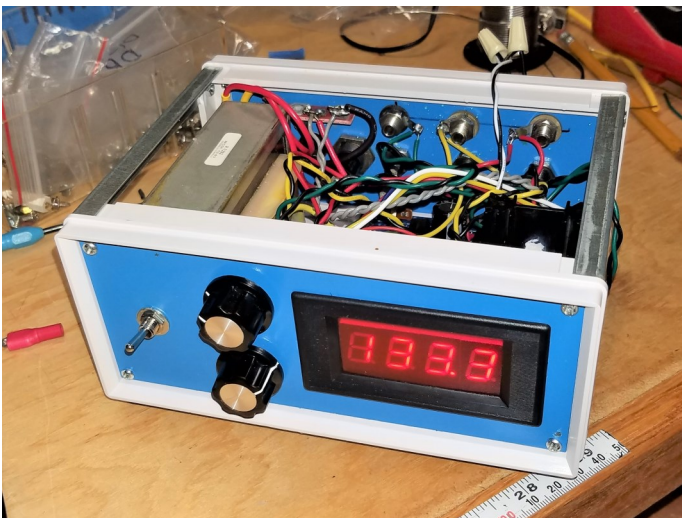
A Wayback Power Supply (cont.)

back panel. Both the A and C outputs go directly to banana jacks on the rear panel. The B voltage taps on the Zener string are brought to a five position switch whose common terminal goes to the output "B" jack. A modular LED voltmeter is switchable to monitor each of the three supplies.



N4NM's constructed proto-board

It looked, at first, as though there would be plenty of room in that nice box.... but NOOOOO. The transformer was a very tight fit, and all the interconnecting wiring made for a busy build.

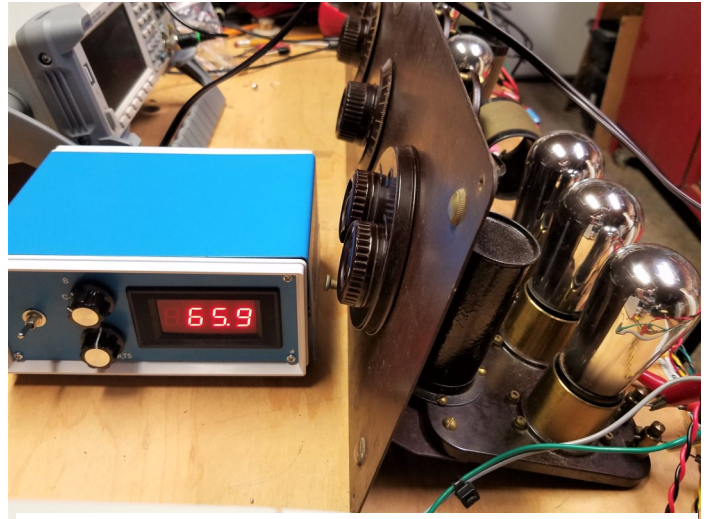


Fit in the case was very tight.

So how does it work? It is very, very hot. The linear regulator for the filament line dissi-

pates a lot of heat and wasn't intended to be housed in a cabinet. I'll try to replace it with a more modern switched regulator that will be a lot more efficient and thus much cooler. Otherwise, it's doing a good job. I've used it to resurrect an Atwater-Kent Model 20 TRF set that is playing rather nicely now after many years of neglect.

Maybe you'll see that A-K Model 20 at a future DX Club meeting!



N4NM's new power supply is connected to his Atwater-Kent Model 20 TRF

Power Supply Circle of Life

By Rob Suggs, NN4NT

I have come full circle from linear supplies, to car batteries, to switching supplies and back to linear. My first transceiver was a Heathkit HW-202 2m rig with matching linear power supply. It worked fine and stood the test of time through several upgrades to newer VHF/UHF rigs over the decades. When I needed more current for a homebrew 100w solid-state HF amplifier for my Ten Tec Argonaut 509 I procured a car battery. It was clean, quiet and relatively cheap for a 25-amp supply of the early 80's. Although not intended to be a power supply I abused my Heathkit HR-10B tube receiver by using it to power a homebrew, single-tube CW transmitter. I'm sure it was very chirpy because the receiver lamps and tubes dimmed considerably on key down. It was a bad idea but I learned a lot from that project and made a few contacts from my college dorm room.

Power Supply Circle of Life (cont.)



NN4NT's Heathkit HWA-202-1 Linear Power Supply

My first modern solid-state rig was a Yaesu FT-950 which I powered with a deep cycle battery on a trickle charger. The clean, high current which can run for a while during a power outage was very attractive. Once I added a solar panel and charge controller, I enjoyed working some Field Days from home as 1E (emergency power). I added a Samlex SEC-1235M switching supply a couple of years later which gave a little better power output due to the 13.8V rather than 12.5V.



Samlex SEC-1235M Switching Power Supply

After I upgraded to the Yaesu FTDX101D I decided to go back to the old school linear supply and purchased an Astron RS 35M. It is very clean and quiet, electrically and audibly, with no fan noise unlike the Samlex which can be loud when the fan is running. The Astron is very heavy and is relegated to under the operating desk. I still have the deep cycle batteries and solar charge system for emergency and occasional contest use.



Astron RS-35M Linear Power Supply

New Members

The North Alabama DX Club has 4 new members! Please take a moment to welcome each at the next meeting.

Larry Crim, K4AB

Laura Morgan, K4CNY

Christopher Arthur, NV4B

Norman Schklar, WA4ZXB

Upcoming NADXC meeting:

Tuesday, October 12th, 2021

6:00 PM Doors Open

6:30 PM Meeting

Location: Museum of Information Explosion and via Zoom

Food permitted at provided tables only

New Kid on the Block (Greetings from a New Member)

By Norman Schklar, WA4ZXB

While I've been around a few blocks over the past 55 years of ham radio, it never ceases to amaze me how we assume the new kid knows what we're talking about at meetings or online. The statements like "we'll do it just like last year" just don't help us new guys catch on. This isn't just a NADXC problem, it's pretty universal in the ham world. So folks, even though 95% of the people in the room know what "Just Like Last Year" means, some don't.

I put up an end fed 80 meter from MyAntennas as a first and easy antenna to get going, and I've been impressed. I can work most bands without a tuner.

I'm putting together a Butternut HV9. Never used a trapped vertical before, so in the next few days I should know how it's working. I take that back. I had a Cushcraft R7. Any comparisons I made with the hex beam led me to stay with the beam. Disconnected the coax several years ago and sold it just before leaving Norcross.

I saw an announcement about Win11. So, I started looking for a download. Windows requires you to test your system. The first 3 I tested failed. Something makes me think the requirements may let up a little bit or there will be some patches. I'll just wait a while.

Enjoyed the banquet. Even though I didn't win big. Oh well, next year.

Meeting Minutes and Financial Report

September 2021 Meeting Minutes

Bob, K8KI, called the NADXC September 12th meeting to order at 6:02pm. The meeting and all future meetings will be held at The Museum of Information Explosion on University Drive.

Bob, K8KI thanked the owner for allowing NADXC to meet in this location. Bob, K8KI also stated that several of the members are helping to restore some of the radios to prepare for the museums opening next year. Bob conducted a quick DX quiz. All the answers were in the Longpath. Two new members were voted on by the club, K4AB, Larry Crim, the current leader of ACG and Chris Arthur, NV4B who is a former ARN young ham of the year, and a veteran VHF contester. Both were unanimously approved.

Chris, AI4U provided the financial report including the banquet costs and income. We were down a bit but not by much. Bob, K8KI, commented that this was acceptable with the last-minute cancelations. We had over 100 in attendance. Roughly twenty percent of ticket buyers did not make the banquet. Mark, N4BCD spoke of the success of the Huntsville Hamfest and thanked all of the volunteers to make it the friendliest hamfest. NADXC was presented a donation by the hamfest in appreciation for all the volunteers that contributed to the hamfest's success. As of Mark's update, Huntsville was the largest hamfest in the world. The meeting was adjourned at 6:57pm. Chuck, N4NM provided a great program on the beginnings of radio including the crystal radio set and the story of how N4NM came to be as a result of radio.

September 2021 Financial Report

Beginning Checking balance	\$4386.97
PayPal deposit	\$4,156.25
Current Balance	\$8,543.22
Outstanding deposits (Hamfest)	\$328.00
Total Funds	\$8,961.22

2022 Board of Directors Nominations

By Fred Kepner, K3FRK

The election of the 2022 NADXC Board of Directors will occur at the club meeting on Tuesday, November 9, 2021. At the September meeting, President Bob DePierre, K8KI, appointed a nominations committee consisting of Bruce Smith, AC4G; Steve Werner, AG4W; and Fred Kepner,

2022 Board of Directors Nominations (cont.)

K3FRK. The committee was tasked with developing a slate of nominations to be announced at the October 12th meeting. The committee spoke with current directors and solicited nominations from club membership. After a month of recruitment and discussion, the committee has concluded the process. We hereby put forth the following nominations for the 2022 NADXC Board of Directors:

President	Bob DePierre, K8KI
Vice President	Steve Molo, KI4KWR
Sec/Treasurer	Chris Reed, AI4U
Director at Large	Bruce Smith, AC4G
Director at Large	Fred Kepner, K3FRK
Ex-officio Director	Steve Werner, AG4W

The Role of Members in the NADXC By Bruce Smith, AC4G

Typically, I would write about articles relating to ham radio such as reviewing and giving my experiences with ham radio equipment, different transmit and receive antennas, my experience DXing and/or radio sport contesting, providing some experience and advice on specific ham radio hardware & software that I have used, etc. This month I gave it much more deeper thought and decided to give my thoughts on what I believe to be the key component(s) of making the North Alabama DX Club (NADXC) the best amateur radio club ever – the NADXC members and the role of the NADXC membership.

Successful DX clubs are enthusiastic with an agenda full of interesting things and energetic members. As a member, we feel welcomed. You learn something or share something of use to another ham. Even following the club meeting will leave you with a sense and eagerness to return to the next meeting. The future of the NADXC club relies on the motivation and promotion of activities to recruit new potential DXers. What makes

2021 NADXC Officers and Directors

President	Bob De Pierre, K8KI
Vice-President	Steve Molo, KI4KWR
Secretary/ Treasurer	Chris Reed, AI4U
Directors:	Kevin Hibbs, KG4TEI Tom Duncan, KG4CUY (SK)
(Ex-Officio)	Steve Werner, AG4W

How to Join

Come to a club meeting or send in an application by mail (form on www.NADXC.org)

This edition of The LongPath published by:
Fred Kepner, K3FRK

NADXC club successful? Is it the officers and the leadership? Is it the club newsletter in our case the Longpath articles?

Most of us enjoy amateur radio DXing because it is fun! It allows us to escape the work and stress in life to relax and have fun achieving a goal of making a QSO with another ham radio operator in a distant country, or achieving DXCC, Worked-All-Zones (WAZ), or even making many contacts in a radio sport contest. This fulfills our need and we continue to get on the air to achieve this sense of a stress-free, relaxing activity. One place to learn about DX is in the NADXC club. We must ask, what makes or would make the NADXC a great radio club? It has to be fun with short business meetings, with plenty of fun activities and a fun, learning program, and a warm welcome by all of the club members to each other and their guests at every meeting. It includes other events such as Field Day, the NADXC Picnic, helping out at the Huntsville Hamfest and banquet. It includes participating in other fun events.

The Role of Members in the NADXC (cont.)

With respect to the club programs, the most popular programs will meet the needs and interest of every member. The members must express their topic desires to the officers. The NADXC club attempts to access members who have the desire, talent, and skill to offer-up a program at club meetings. In time, each member should be offered an opportunity to deliver a program. There are an infinite number of topics that can be covered in amateur radio by a diverse group of NADXC members.

With this said, the lengthy planning and club business can be done by the club officers in another venue. I believe the NADXC officers help our club to succeed. The NADXC officers like any organization represent the membership and its success is highly dependent on the decision made by the club leadership. The success of the NADXC can be seen by other DX groups and ham radio clubs around the country and across the globe.

Remember, officer nominations and the election are in the forefront of our club for the months of November and December and should not be taken lightly. This happens annually. As a member, I believe that we as members should nominate and elect those members who are (1) willing to serve; (2) can devote time in preparing for their specific officer function for meetings and guiding the NADXC in the direction for growth; (3) can prepare and/or assign members who are willing to make presentations to the club relating to various facets of ham radio; (4) have some technical knowledge and abilities to pass along to other members; and finally (5) have time for the officer position they are nominated and elected to fulfill the duties of each position elected. The NADXC officers hold positions such as President, Vice-President, Secretary, Treasurer, and Member-at-Large.

Sometimes it is very difficult to get members to run for one of these positions. As members, we should all strive to groom ourselves to one day serve as an officer of the NADXC. Many of our members have other commitments that pro-

hibit them from serving this year, but perhaps next year their willingness to serve can change and should consider leading & serving as a NADXC officer in some capacity. The success of the NADXC is in the hands of the club's officers who are willing to lead us in the proper direction for technical growth and an increase in club membership being good stewards managing the finances & budget of the club.

In every organization that I have ever been associated with or a member of, there are those who lead and there are others who always follow and never want to lead or serve as an officer. Some are born leaders, while others can only follow or take directions. But the NADXC has a membership of diverse individuals who come from all parts of the country, differing back grounds, differing education degrees & levels, and differing experience who can share an abundance of education and knowledge to the other members. The driving force behind every club or organization is its diversity and its membership. Club participation and technical interchange of information impact the NADXC and can make it a more enjoyable venue during club meetings if we all share information. Sometimes we are challenged to participate more. This is a good thing for both you and me. When asked to write an article or make a presentation, I take this on as a challenge. Do I get butterflies in my stomach? You bet! Do I have time to do these tasks? I make time. But if I can share one piece of advice that helps my fellow NADXC member, all of the time preparing for the presentation and all of the nerves that were shattered were worth it all.

Further, in my past experiences, I have seen that club and/or organization members exhibit three main types of traits: values, involvement, and satisfaction. Values vary by occupation, age, and education gender. Many members focus on economic factors, while others focus on opportunities to develop abilities and appealing challenges. Involvement is related to commitment and participation. Involvement is associated to membership turnover and absenteeism. Wanting to be involved and working hard in the club obviously differ from member to member. Satisfaction depends on a member's values and challenges. Club satisfactions helps members engage and partici-

The Role of Members in the NADXC (cont.)

pate. Do we share these traits? Do you give or merely take?

All members of any club or organization are very important. It takes us all for the NADXC to succeed. Some factors I believe to be key for the NADXC members' consideration include the following:

- 1) Be radioactive and get on the air. Work DX! Participate in a contest!
- 2) Be loyal to the NADXC club and attend most, if not all of the monthly meetings and other events such as the annual picnic, antenna raising parties, Huntsville Hamfest activities (flea market move-in, banquet, etc.), Field Day, etc.
- 3) Be willing to share our knowledge. We all must be willing to devote our time not always be on the receiving side, but also to share our knowledge when asked to provide a program or contribute by writing a Longpath article (could be other requests) or help when called upon for assistance.
- 4) Be a mentor. We all must be an Elmer/mentor some of the new hams to be great DX'ers and achieve DXCC or WAZ. This entails sharing technical and basic ham radio knowledge that we have acquired over the years.
- 5) Be ready to enhance your technical base. We must continue to enhance the ham radio technical knowledge of every NADXC member via sharing, technical events, etc.
- 6) Be ready to promote fellowship by helping hams meet others and help each other. We must help our fellow ham with their station or antenna raising.
- 7) Be willing to recruit new DXers to the NADXC. This is the lifeblood of the club.
- 8) Be willing to serve as an officer of the NADXC to replace old ideas with new ones and exhausted officers with new energetic ones.

Motivated and satisfied members work together efficiently to help an organization to succeed and promote a healthy culture and NADXC. If you are like me, we all want the NADXC to be successful and a pillar in the DX community. As a NADXC member, I trust we all will consider some of these thoughts. I trust that we can all make the NADXC enjoyable and a worthy club for all of us to be a member and for us to all enjoy and grow.

Everyone Can Contribute

By Steve Werner, AG4W

Bruce AC4G has a great and well thought out article this month. It has been interesting the last 2 months helping Mike write an article for the Longpath. It was so exciting for him to contribute last month he wanted to do it again this month. Helping someone with a disability contribute is rewarding in itself.

Most people find out they learn a lot by writing an article or giving a presentation. I never start a presentation knowing everything about a subject. Many are afraid to contribute because they don't feel they know everything about the subject. We need to help our members over that hurdle. Fortunately, our club is a small group and that fear is easier to overcome than a group of a 100 or more.

I just finished my 3rd article for CQ magazine this year. That gives me anxiety because I know I am not the smartest of their readers on each of the subjects I wrote about. I am not afraid to tell others the mistakes I have made so they don't make the same mistakes. I found out yesterday that 30,000 people get CQ magazine. I always worried in a large presentation or an article with such wide readership you would get called out or embarrassed by some error you made. Looking back over 40 years of presentations and articles, it is amazing how rare that happens. Most want to encourage you to contribute again. You can only find out by trying.