

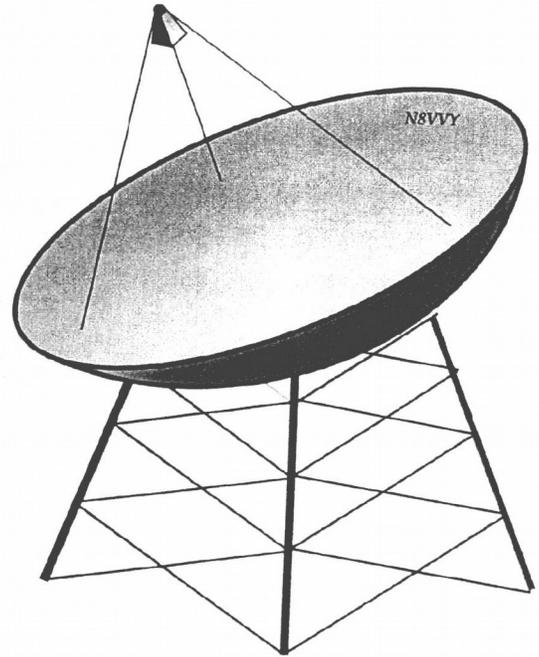
ANOMALOUS PROPAGATION

Newsletter: *The Midwest VHF/UHF Society*

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Annual Society membership is \$ 12.00. Please
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Apr. 2019

Beacons: 1296.079 **W8KSE** EM79ur Dayton, OH---- 2W to Big Wheel at 800' AGL.

Our Beacon List will be updated shortly. Sorry fr the delay!

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Hamvention: May 17,18,19 2019

MUD Hamvention Booth No: 6708

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DE N8ZM: At the risk of jinxing the onset of Spring, the weather this past week has been pretty nice, finally. Not perfect but at least the temperatures have been warm enough to allow some outside projects to commence. No antenna work just yet, but tasks needed to allow such projects to proceed were done. Of course, most of those were Honey-Do's, which naturally have to be completed in order to earn permission for any 'frivolous' pursuits to commence. You guys understand, I'm sure.

Our Hamvention booth has been locked in now (6708), and several of you have signed up (or been conscripted) to help staff it for the weekend. Thank you! Any others who wish to help are welcome to stop by for a spell to give the volunteer guys a break, as it's a long weekend. I'd also encourage you to bring some object of interest or curiosity that you might own to show off in the booth for visitors to appreciate. It is a way to attract people to our booth and then tell them what MVUS is about, and hopefully they will consider joining our merry band. And if your dues are in arrears, it's a great time to get caught up! Just sayin'.

By the way, we will be in the same location in the big white tent as in the past.

You may or may not see this column before the April meeting, so I will mention now that the May meeting will be on the 24th, the Friday following Hamvention. I will be en route to the SeaPac hamfest in Oregon by then, but the remaining officers have shown time and again that they are fully up to the task of running the meeting, or at least determining that it can adjourn immediately following dessert. Or better, after all of the Hamvention stories have been told. Enjoy!

I have succeeded in resurrecting the noise source calibration program and have been getting reliable results, so have kicked off building at least a half dozen MVUS sources with the new board layout created by W8RKO, and being built by N8ASB, which means we will probably have some for sale in our booth at Hamvention, or at least can take orders. There will again be two versions, one for 3 GHz, the other for 11 GHz. Check at the booth if you are interested.

That's all for now. Next month there will be report on the VHF Superconference held near DC, which W8RKO, N8QOD, WA8OGS, and N8QHV are attending. I am writing this just after arriving at the hotel and am looking forward to an informative weekend.

See you at Hamvention!

de Tom, N8ZM.

This and That 4-19

Conscience. Labor to keep alive in your breast that little spark of celestial fire, called conscience. [George Washington]

Lying. Father, I cannot tell a lie. I did it with my hatchet. [George Washington]

Golden Rule. I would define liberty to be a power to do as we would be done by. [John Adams]

Politics and War. I must study politics and war that my sons have liberty to study mathematics and philosophy. [John Adams]

Luck. I am a great believer in luck, and I find the harder I work the more I have of it. [Thomas Jefferson]

In Congress. If congressmen talk too much, how can it be otherwise in a body to which the people send one hundred and fifty lawyers, whose trade it is to question everything, yield nothing, and talk by the hour. [Thomas Jefferson]

Liberty. The tree of liberty must be refreshed from time to time with the blood of patriots and tyrants. It is its natural manure. [Thomas Jefferson]

Education. The diffusion of knowledge is the only guardian of true liberty. [James Madison]

Conscience is the most sacred of all property. [James Monroe]

High Voltage.

By Gerd, WB8IFM

I've been reading books on Edison and Tesla and the times a hundred years ago, when electricity was new and the fight between AC and DC raged. AC won out but there were lots of other big decisions to be made. So today we have a hodgepodge of voltages and frequencies...

We in the US have 60 cy 115 VAC +230 VAC in the houses. Normally everything is 115V, only a few things run on 230. For your "radio" you probably have 230VAC to supply the KW linear.

As you probably know, I've been driving an electric car (Fiat 500e) for the last two years which needs the battery to get charged almost on a daily basis. The battery is a 24 kWh lithium battery which I usually charge overnight with the charger the car comes with and plugs into an regular 115VAC socket.

This is called a level 1 charge and is what works best for local use during the day. However, on occasion you might want to charge the battery a little faster and there you need a level 2 charger.

To this point I have used the level 2 charger only occasionally. There is one at the Air Force Museum (good for 4 vehicles) and during the time I am visiting (once a month) in 1 hour I can store approximately another 10 miles worth of driving, (no charge).

For last Christmas I got myself a level 2 charger, which is available for ca \$200 on E-bay. The charger, is a power rectifier to deliver HV DC to the HV battery. Of course, the power cord and the plugs are special, heavy duty, and that is probably where the higher cost comes in.

When we had a garage added to the house many years ago I had a visiting friend, who had an electrical business and builds and fixes electrical installations for industry, install the electricity in the garage. Of course, two receptacles for the coming "Electric" were installed: one for 115V and one for 230V. For the 230V we used the same type receptacle that I installed in my shack for the Linear.

The clothes dryer uses a humongous receptacle and plug, so the average citizen notices there is a difference and uses extra care!

Sometime between X-mas and New Year I tried out the new charger and it worked like a charm, cutting down my charging time as calculated to approximately 1/3 to 1/4 of the time used with the 115V charger. However, when some time in January I tried the "fast" charge again it didn't work. It was too cold to do some checking and I gave up.

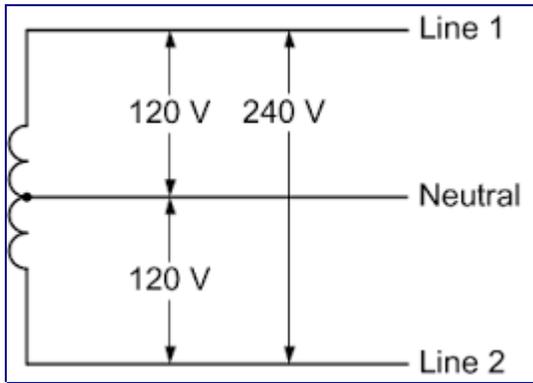
A few months later now, in March, I tried charging again and it worked fine, bingo, my cold temperature explanation seemed right! But there is more to it:

Back in November, just before it got cold we had some work done on the flat roof of an addition to the house. And somebody stepped on my 115 VAC Charge cord bending the plugs pins. I got them straightened out as good as I could but the charger did not work. I had an extra plug so I cut the cable and was surprised to find that the cable actually had 5 leads. The power, 230V were two, then the ground one, these were easy to identify but what about the two thinner ones?

A neighbor helped with this problem, measuring the resistance between the two wires at around 10 k-ohms. He suggested this might be a thermistor in the plug keeping track of developing heat in the plug. I added a 10k resistor across the two thin wires and the charger was working again. The lesson learned was: there is serious voltage here, and serious currents: watch out for a hot, temperature wise plug.

The 230 V receptacle also had been installed 20+ years ago and the contacts were not like new anymore, possibly contributing to a "contact problem!"

120 / 240V Single Phase 3 Wire (1P3W)



In the US, 240V Power is provided to homes and small buildings as a 120/240V 1P3W power circuit. It provides 120V for light loads (lights, TV, etc.) and 240V for medium loads (Water Heaters, AC Compressors, etc.).

MAXIMUM POWER – In a single phase power circuit maximum power is calculated as the voltage times the current. If we assume it's a 200A power circuit then the maximum deliverable power is 200×240 as follows

- Current (Amps): 200A
- Voltage (Volts): 240V
- Maximum Single Phase Power
 - 48 KVA Kilovolt Amps or
 - 48 KW Kilowatts

Lightning Detector at Work.

By John Ackerman, N8UR

This was published several years ago, John will update this shortly. Ed.

At the beginning of April I started getting some antennas on the roof at N8UR/4, near Snellville, Georgia (about 25 miles NE of Atlanta). Along with the VHF verticals, GPS antennas, etc., I installed the antenna for my Boltek lightning detector.

I got the detector hooked up on Monday, April 4, in time for a line of serious storms that came through Atlanta just before midnight. Because of the rush to get the detector connected in time to test is with the storm, I didn't put the computer on a UPS. The system was set to take a snapshot of the software display once per minute, and upload that to the febo.com web server (which is located at a data center far away from Atlanta).

The storm hit at about 11:45PM local time, with heavy lighting activity and strong straight-line winds. As the storm was literally overhead, there was a power glitch and the lightning detector computer glitched and reset itself. We also lost our cable internet connectivity for about 8 hours.

However, the system had uploaded an image to the web server right before the glitch, so this screenshot shows the display just as the

storm was hitting.

The "radar" plot on the left side shows a 16 mile radius from our house and it's quite amazing to see the lightning strikes running so cleanly SW to NE with the line directly overhead. The blue Xs are the most recent strikes; older strikes show as yellow dots. At the time, the detector was registering 316 strikes/minute, almost all of them within 30 miles; the nominal "severe" limit is 120 strikes/minute.

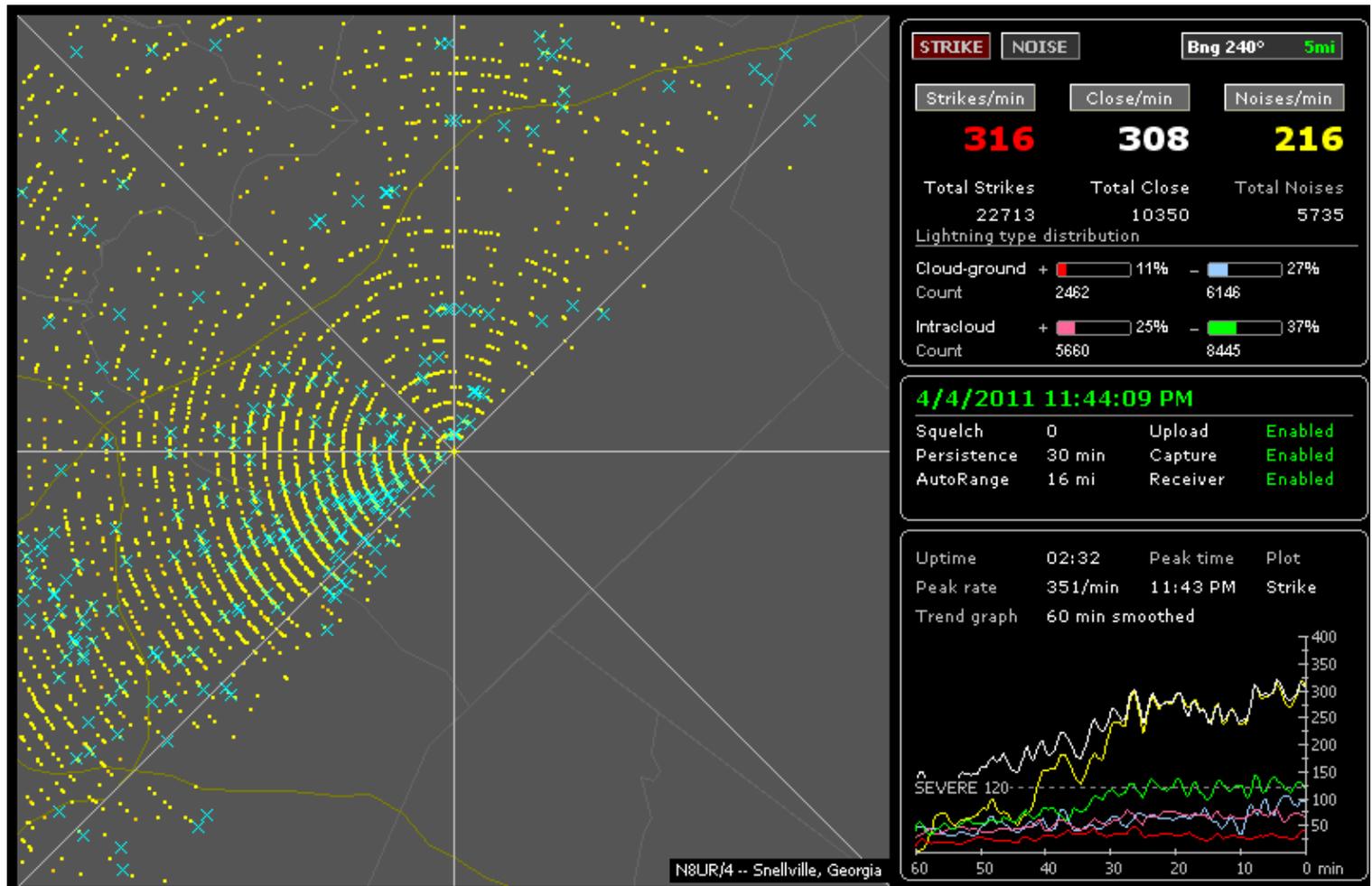
I sent this image to the author of the software, who commented that I have a very good location for the antenna, as there are no reflections of the signal appearing on the other side of the axis. He also told me that the severity here was nothing near the record, as he's seen a plot showing 2100 strikes per minute from a storm in Australia, and just over 2000 from a storm in Oklahoma!

A second screenshot* shows the display when all is quiet. You can see that the range is now 250 miles; the software automatically zooms in when a storm approaches. The reliable range varies and is greater at night and over water (ca 300-500 kHz). I don't

have a sense yet what the reliable range will be here in Georgia. The software allows calibration of both the range and bearing, by comparing with known storm locations from the National Weather Service or other sources. I haven't started on that process yet.

The lightning detector is a Boltek (<http://www.boltek.com>) Stormtracker, which is a PCI card that installs in the computer. The antenna is a small box that includes a pair of crossed ferrite antennas and a preamplifier. The "feedline" is a piece of Cat 5 network cable that sends power up the antenna and sends multiple signals down to the PCI card. Again I believe the receiver is fairly wideband and operates in the 300-500 kHz range. Its signal processing determines bearing and distance to a strike, as well as determining whether it is cloud-to-cloud or cloud-to-ground.

The display software is "Nexstorm" from Astrogenic software (<http://www.astrogenic.com>). The software communicates with the Boltek card via a Windows device driver; there are a couple of other programs available



* Missing in this report.

Midwest VHF/UHF 2019 Roster

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