



HamGab

Next meeting: December 4th

December 2015



Christmas Party December 4!

Our Hamfesters Christmas Party is on December 4th at Papa Joe's in Orland Park. Doors open at 6:30 PM-Dinner at 7 PM. The deadline for purchasing tickets is December 1. Ticket prices are \$25.00 each, they can be purchased online at Hamfesters.org using PayPal or call Jim at 708-218-0695 This year there will be prizes including a flat screen TV, three weather radios, two \$50 dollar cash prizes, and table favors. Also, this year's awards will include a President's award along with the Hamfester Of The Year Award.

It will be a fantastic evening. Papa Joe's is located at 14459 S LaGrange Road. It's easier to come in from the back. If you can, arrive early to help with setup. We hope to see you there.

Our last meeting started with a prayer for our veterans in honor of Veterans Day eloquently lead by Steve W9KXT. Our program was presented by our very own geocacher, Jim KB9CY. Being fellow cachers, we really enjoyed Jim's presentation. I just wish I'd know earlier about that little trick of taking a compass to find your way out. It is true that we're always so focused on finding that cache that we never remember to set the GPS to get us back home. I especially like the idea of the inspection mirror as I remember sticking my hand into a 100 year old bell in the middle of a park on a hot July day looking for a mico and hoping there weren't any bees inside. Of course, when I mentioned this to Eric, he just said "that's why I bring dad". Anyway, great job Jim.



Health and Welfare

Our president Don KC9EQQ's mother is seriously ill and in the hospital so we will not have a president's column this months. Our thoughts and prayers go out to Don and Nora and their family.

PO Box 474
Crestwood, IL
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Special Interest Articles

Ground Rod Testing pg. 4
Field Day Results pg. 6
Sputnik and GPS pg. 7

December Birthdays

Robert K9MDO
Richard N9UNQ
Ron KB9ZBN
Al N9ZD
James KC9SOG
Frank K9BWQ
Steve W9KXT
Michael WA9YJA
Brock KF9GI
Joseph KB9FBF

Officers

President-Don KC9EQQ
Vice President -Jim KB9CYL
Secretary-Patty KC9LYE
Treasurer- ED WA9EOL
SGT at Arm-Jim N9HSH
Trustee-Bruno K9QKB

Board Members

Nora KC9MLV
Steve W9KXT
Kurt WB9FMC
Kerry AA9SB
Cathy KC9NRH

Hamgab Editors

Steve & Eric
KC9OOL & KC9OOM
Scapstone@aol.com

Board Meeting Minutes de Patti, KC9LYE

Hamfesters amateur radio club board meeting October 26, 2015 meeting began at 7:30 PM

Roll: Don KC9EQQ, Jim KB9CYL, Patti KC9LYE, Ed WA9EOL, Steve W9KXT, Kurt WB9FMC, Nora KC9MLV, Cathy KC9NRH, Kerry AA9BS, Brian W9HLQ, Gene W9PNG, Jim N9HSH.

A moment of silence for a soldier in Bill N9YQS Peter's, company in Afghanistan who was killed.

President's report: by Don KC9EQQ, Don and Nora KC9MLV, thanked everyone for their support, after the death of his dad, Donald pointer Sr. 1935-2015

There will be a board meeting Thanksgiving week on Monday, November 23 at 7 PM.

The Christmas party at Papa Joe's in Orland Park on Friday, December 4 at 7 PM.

The deadline for purchasing tickets is December 1. Ticket prices are \$25.00 each, they can be purchased online at Hamfesters.org using PayPal. There will be a prize drawing, the president's award, and Hamfester the year.

Programs: November 6, club elections for board members, and Jim KB9CYL, geocaching.

January 8, 2016 (the second Friday) Jim N9HSH, how to program your Bofang handy talkie.

February 5, 2016 Gregg AB9MZ, technology radio and other cool stuff!

March 4 white elephant sale.

April 8 Dave N9KPD, weather spotting.

May 6 Brian W9HLQ, explains our club's SDR (software defined radio) transceiver.

June through August same programs as always.

Hamfest 2016: by hamfest chairman Kurt WB9FMC, we need a new hamfest chairman for 2017, Kurt is more than willing to work with the new chairman. Kurt will be the chairman for 2016 only, he's not kidding!

Treasurer's report: by Ed WA9EOL: our club has filed with the IRS, we have paid Jim N9HSH, for his work building a new computer to be used with the club's SDR transceiver. Don KC9EQQ, gave Crestwood a check for \$250.00 for the use of the community center, this was approved by the board last month.

Publicity: by Kerry AA9SB, publicity was sent out for November VE testing, club elections, and geocaching program.

Field day 2016: by Jim KB9CYL, June 25-26

New business: by Nora KC9MLV, some of the other prizes, included at the Christmas party will be; a flat screen TV, three weather radios, two \$50 dollar cash prizes, and table favors. Also, Brian W9HLQ, suggested we might consider looking into Hamfesters becoming affiliated with the ARRL, there are benefits.

Adjournment 8:45 PM Jim N9HSH, and Gene W9PNG



Hamfesters Member News

Herb Majer has a new call: W9HEM. It was KC9OOK. Congrats on your new call, Herb!

New Member: Barb Steffen KA9BAG, welcome Barb.

General Meeting Minutes de Patti, KC9LYE

Hamfesters amateur radio club meeting November 6, 2015 began at 7:35 PM

Roll: Don KC9EQQ, Jim KB9CYL, Patti KC9LYE, Ed WA9EOL, Jim N9HSH

At tonight's meeting there were; forty-two members and seven visitors.

Steve W9KXT, read a prayer for veterans and their families.

Health and welfare: Mike W9ZPM, lost a friend who was a ham.

Kerry's AA9SB, brother has died. Mike and Kerry we are very sorry for your loss.

President's report: by Don KC9EQQ, Don and Nora KC9MLV, thanked everyone for their support, after the death of his dad, Donald pointer Sr. 1935-2015.

The Christmas party at Papa Joe's in Orland Park on Friday, December 4 at 7 PM. The deadline for purchasing tickets is December 1. Ticket prices are \$25.00 each, they can be purchased online at Hamfesters.org or using PayPal. Some of the other prizes, included at the Christmas party will be; a flat screen TV, three weather radios, two \$50 dollar cash prizes, and table favors. Also, there will be awards given at the Christmas party the president's award, and Hamfester the year. There are thirty-eight tickets sold so far for the party.

Tonight's program club elections for board members, and Jim KB9CYL, geocaching.

Programs:

January 8, 2016 (the second Friday) Jim N9HSH, how to program your Bofang handy talkie.

February 5, 2016 Gregg AB9MZ, technology radio and other cool stuff!

March 4 white elephant sale.

April 8 Dave N9KPD, weather spotting.

May 6 Brian W9HLQ, explains our club's SDR (software defined radio) transceiver.

June through August same programs as always.

Election: election tonight for board members. There are six candidates; Nora KC9MLV, Cathy KC9NRH, Kerry AA9SB, Steve W9KXT, Kurt WB9FMC, and Cindy N9CAS. Vote for five candidates. Winners; board members for 2016, Nora KC9MLV, Cathy KC9NRH, Steve W9KXT, Kurt WB9FMC, and Cindy N9CAS.

Don KC9EQQ, and all the members of Hamfesters thank Kerry AA9SB, for his service, past and present. As past president, hamfest chairman board member, and his continued efforts as publicity chairmen. Thank you, Kerry!

Treasurer's report: by Ed WA9EOL, Don KC9EQQ, gave Crestwood a check for \$250.00 for the use of the community center, this was approved by the board last month.

Secretaries' report: by Patti KC9LYE, I would like to thank Cathy KC9NRH, and Bob N9KWG, and Hamfesters for the birthday cake, and best wishes. I was really surprised, and honored, thank you.

Publicity: by Kerry AA9SB, publicity was sent out for November VE testing, club elections, and geocaching program.

Badger trip 2016: report by Pete K9OWQ, the next badger trip is scheduled for last weekend in September.

New members; Barb Steffen KA9BAG, welcome Barb.

Hamfest chairman: by Kurt WB9FMC, we need a new hamfest chairman for 2017.

New business: The next regular meeting will be on January 8, 2016 (that's the second Friday). Don KC9EQQ, would like to thank Nora KC9MLV.

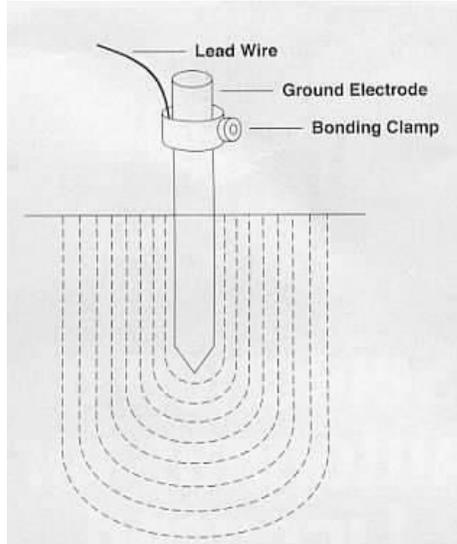
Happy Thanksgiving everyone!

Adjournment: 9:25 PM Bob N9JYX, and Kurt WB9FMC **split the pot winner: Kurt WB9FMC.**

Door prize winners: Mike WA9ZPM, Nora KC9MLV, Herb KC9OOK, and Dave WB9VB

Testing Ground Rod Bonding Resistance

How do you know your ground system is intact and working? Most often the weakest link in a grounding system is the bonding from one conductor to the next. This would be from the ground wire/cable to the bonding clamp, and the connection from the clamp to the ground rod (sometimes called an electrode). In RF environments, multiple antenna systems, ground rods, and ground radials may be involved so naturally they all must make proper connection. These bonding points can degrade with time due to vibration, climatic changes, weather moisture causing galvanic corrosion, and other reasons. Your ground connections should be checked periodically. There are several ways of checking the integrity of bonding conductors in a grounding system.



First, visually inspect the entire site, looking for loose connections, broken connection points and corroded connections: repair any of these.

Secondly, do a mechanical inspection, physically stressing each connection looking for less obvious loose or broken tie points.

Lastly, do an electrical bond resistance test. [Check below on how to make your own tester, easily!] Here the most appropriate instrument to employ is a micro-ohmmeter. The micro-ohmmeter is far more effective in checking the quality of a resistive bond than a multi meter or other resistance-measuring device. The micro-ohmmeter conducts the test with a higher current. In this way, the quality of the bond is electrically stressed, eliminating the appearance of good resistance from weak connection points, such as a connection point where a single strand of wire is the bonding point. In this

case, the multi meter using low current would potentially show this single strand bond as a good connection. The micro-ohmmeter will quickly identify it as a poor bond by actually causing the single strand connection to open. Before reviewing the actual testing process, let's first examine the components of a grounding electrode. Notice the figure above shows a typical grounding electrode with three major bonding points: the ground electrode, the bonding clamp and the lead wire. All three points should be checked with respect to each other.

A satisfactory resistive connection will be in the micro-ohm region and at worse case the milli-ohm region. This test procedure should occur for every bond along the grounding system from the tower and all equipment right down to each and every grounding rod. This testing of the bonding system should be conducted at very least annually to ensure a good quality grounding system.

How to Make Your Own Milli-Ohmmeter

The micro-ohm meter is not a test instrument that the typical ham will have, of course. But you can easily approximate the function by following the steps below:



Locate a fairly inexpensive automobile battery charger in the 6 to 10 amp charging range. I used both a very old K-Mart charger rated at 6 amperes and also a newer charger also was rated a 6 amps, but the meter reads to 8 amps. I used an automotive charger since it has relatively high internal resistance and will endure momentary shorts repeatedly. You could use bench DC power supply that has current limiting. Set it for 10 to 20 amps current limit and measure all day long! The automotive charger can be found at garage sales and flea markets for just a few dollars and makes a great piece to test gear.

Locate or borrow a high current ammeter, and with caution, determine the maximum current the charger will deliver in a short circuit condition. I found that the one I was using would deliver 35 amps when I shorted the

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clip leads together. Of course this is for a split second, since prolonged short will open the internal circuit breaker.

Next, place one charger lead on your ground rod, (see figure above) and then momentarily touch the other lead to first the bonding clamp and then to the lead ground wire. Of course, small sparks will fly as the 35 amps goes through the connection. This exercise will prove that the connection is electrically sound: if it can pass 35 amps, it can pass your RF with little attenuation, and should the need arise, the connection can safely pass lightning surges to ground.

To estimate the resistance of the connection, place a DC voltmeter across the connection to test. For example, place one volt meter lead on the ground lead wire, and the other connection on the ground rod. Verify the meter connections are secure and then momentarily place the battery charger leads at the same location. Watch the volt meter move up slightly as you pass about 35 amps thru the connection. If the connection is poor, then less current will flow, resulting in a poorer "short" to the battery charger. This will allow the measured voltage to raise indicating higher resistance and more voltage drop at this connection. This is similar to using a shunt for an ammeter, where a voltmeter is measuring the voltage across the shunt.

When doing my tower and ground system, I found very good repeatability in my readings and also measurable variances in the different connections. I found all my connections which have been in place for over 4 years would handily pass 35 amps. In fact, I found I could quickly verify all connections simply by tapping one lead to each ground connection of my radial fan-out. By listening to the battery charger meter "ping" across the scale with the high current flow, I was assured that this connection was intact.

For experimentation I did continue and measure the voltage across selected connections to see what I measured. The following table shows sample readings. Assume 35 ampere current flow (admittedly this value will be inaccurate, but I have no way to determine high currents at various loads). Using Ohm's law I estimate the connection resistance.

test #	Measured volts	Calculated resistance
a	0.1	0.00285 ohm
b	0.17	0.0048 ohm
c	0.28	0.008 ohm
d	0.13	0.0037 ohm

Summary

This simple process of using a automotive battery charger will verify connections are good and also you can identify good connections and better ones quickly. I found several that looked robust and well made, yet they measured poorly. No need to calculate the resistance, just verify that sparks fly when you connect the charger to a connection point This summer after my other projects are done, I will come back to that connection and see if I can improve it.

. ---Brian Davis, W9HLQ

CQ Field Day de Jim Riley

The December QST just arrived and that means the Field Day scores are in. Here's how we did.

Your 2015 Field Day group's final QSO tally was 1690 contacts for a total score, with multipliers and bonus points, of 6314. We placed 22nd out of 155 in the 4A category. That put us in the top 15%, just shy of breaking into the top 14. We finished first in Illinois and second in the Central Division.

Thanks for all your efforts on a field that was less than ideal, *squish squish*. We have a new 75/80 meter antenna and a new Flex radio for the trailer. Brian and his crew will probably have some surprises for the GOTA station, too. I'm looking forward to a great 2016.



Hamfesters VE Testing de Al Bukowski N9ZD VE Coordinator

Hamfesters VE Testing Report for December 2015

Hamfester's Radio Club VE's team assembled to administered Amateur Radio exams on November 14, 2015 at Oak Forest City Hall. However there were no candidates for this test session. Thank You to all VE's for your dedicated time helping me at the test sessions.

Amateur Radio Exams INFO:

Hamfester's Radio Club VE's offer License Testing for those who want to get their first ham license, or those who want to upgrade to a higher class license. Examination sessions are available on the second Saturday of each month. We will assist you with completion of all necessary paperwork prior to taking your exam.

Requirements - What to Bring to an Exam Session:

A fee of \$15 dollars is charged for the examination. Payment is Cash ONLY. Please bring a government-issued ID; (one ID could be a driver's license). If you would prefer to not use your Social Security Number on your application, we suggest obtaining a Federal Registration Number (FRN) from the FCC website - otherwise you'll need to use your Social Security Number.

Upgrade Examinations:

If you are already licensed and are taking an upgrade examination: Please bring your printed *original* license, and a copy of your current license that we can keep. Also, If you have recently taken an examination that has not been processed by the FCC, Please bring your *latest CSCE* and a *Copy of that CSCE* that we can keep.

Retaking the Exam:

If you almost passed an exam on your first try, and would like to try again, you may retake a different version of the exam for an additional \$15 fee.

Morse Code Not Required!

Morse Code is no longer required for any level of amateur radio license. All Morse Code testing requirements for the Amateur Radio Service in the USA were eliminated on February 23, 2007.

Location and Time of Hamfesters VE administered Radio Exams:

Oak Forest City Hall 15440 S. Central Ave. Oak Forest, IL 60452. Doors open at 9:00 AM. We begin testing about 9:15 AM. Enter through the Police door entrance and look for the Amateur Radio testing exam signs for directions.

If you have any questions regarding our test session or about upgrading, please contact N9ZD via e-mail at: N9ZD@arrl.net.

Our next test session will be held on Saturday December 12, 2015. 0900hrs @ Oak Forest City Hall 15440 S. Central Ave. Oak Forest, IL 60452.

Walk-ins are welcome and the test fee remains at \$15.00 (cash only -- no credit cards or checks).



Editor's Rambles

Sputnik and the Global Positioning System

At the last meeting, Jim KB9CYL gave an excellent overview of Geocaching and all of the challenges and satisfaction that comes with finding those caches. Most geocachers now use their phone's GPS to locate caches. My question is: how is it possible that something that tells your position down to the foot using the signals from satellites 12,000 miles away resides in the same phone that gives updates on Bruce/Caitlyn Jenner's current dress size? (It's a size 8 since you had to know). As it turns out, it all started with Sputnik. On October 4th 1957, as Sputnik circled the earth, it had been engineered to emit a constant 20 MHz signal. The Russians wanted everyone including Ham radio operators to know they put it up there. William Guier and George Weiffenbach of the Johns Hopkins Applied Physics Lab noticed that the frequency of the tone changed depending on if the satellite was approaching or moving away from their position. This is a result of the Doppler Effect.



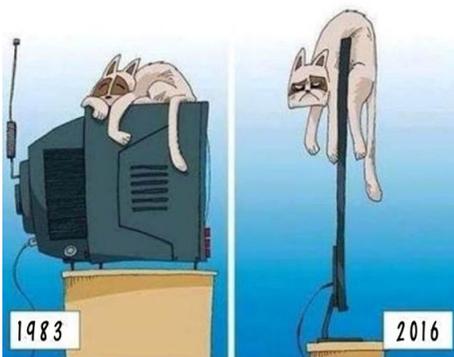
If a satellite is traveling toward you emitting a radio signal, the wave crests are emitted slightly sooner as the satellite approaches. I think of it as the waves being jammed closer together as the object approaches. As you remember from your licensing classes as wavelength decreases, frequency increases. Therefore signals approaching have a higher frequency and as the object moves away the signal will have a lower frequency.

Now to answer that question from the obnoxious kid in my high school physics class: yes, if you are moving away from the teacher as you break wind, the pitch will in fact be lower. As it turns out, being caught by the teacher raised the frequency of the sound emitted substantially. In my school, this was known as the Mr. Abernathy Effect!



Guier and Weiffenbach realized they could use the frequency of the radio signal to track Sputnik's position. Their receiver was stationary so they could estimate the satellites speed and closest approach to their antenna position using the change in frequency. In this way they were accurately able to estimate the satellites position.

Some of the higher ups in the government began to ask if the problem could be reversed. Could the positions of satellites in the sky be used to accurately map the position of objects on the ground? The impetus for this question came from the military. Our submarine fleet was now in the business of launching ballistic missiles and it was becoming imperative for those submarines to accurately know their locations. They were using gyroscopes and accelerometers to keep track of their position but these systems tended to drift with time. With an accurate satellite, the submarine could get an antenna above the surface and periodically recalibrate their position. The researchers did some calculations and realized the system was possible. Currently our GPS systems can use the time that the signals from 4 overhead GPS satellites arrives to calculate positions to within a few feet. Military issues aside, I am sure these far sighted researchers at that time realized the true potential of GPS. Yes, someday they envisioned being in the woods with their grandchildren finding tupperware filled with trinkets. Now that truly is priceless.





Hamfesters Amateur Radio Club

PO Box 474

Crestwood, IL 60445-0474

www.Hamfesters.org

Hamfesters Radio Club



Meetings and VE Testing

Club meetings are held on the first Friday of every month at the Crestwood Civic Center, 14025 Kostner Ave. in Crestwood, IL.

Meetings begin at 7:30 PM. September meetings may vary if our meeting date conflicts with the Crestwood Flower show.

Board Meetings: 7:30 PM on the 4th Monday of each month at the Crestwood Civic Center

VE TESTING: Every 2nd Saturday of the Month at the Oak Forest City Hall, 15440 S. Central Ave. Testing begins at 9:00 AM but we ask that you arrive 10 minutes early. Exam fee is now \$15.00. AI N9ZD VE Team Chairman

Special Activities

Hamfesters Big Peotone Hamfest: Our 79th annual Hamfest coming August 2, 2015-Will County Fairgrounds, Peotone, IL. Kurt WB9FMC Hamfest Chairman.

Field Day: Join the W9AA crew for one of the best Field Days ever on June 25 & June 26 2016 at 115th and Oketo Avenue, Worth, IL.

Jim KB9CYL Field Day Chairman

WAHM: Worked all Hamfester Members-work 10 Current members for a beautiful award certificate. Matt KC9JXC Awards

Nets/Contact Info

10 METER NET: Every Sunday Evening at 8:00 PM on 28.410. Jim N9HSH is Net Control

2 METER NET: Every Monday Evening at 9:00 PM on 146.640. Tom KA9ZXN is Net Control

W9AA Mailbox:145.650 24 hours a day.

Bruno K9QKB is Sysop. ILOAK:Node on 145.650

WEB SITE: www.hamfesters.org Webmaster Granville, W9PNG & Brian, W9HLQ

Club's address:

Hamfesters Radio Club

P.O. Box 474 Crestwood, IL 60445

Patti KC9LYE Secretary

Deadline for Submitting to the Hamgab is the fifteenth of the month.