

Feedline

Voice of the Niagara Peninsula Amateur Radio Club, Inc.

And now for something different...

President's Welcome Message— Steve, VA3FLF

Busy Month

Wow, what a busy past month this has been. I told someone a few days ago that we are running on all cylinders. There is so much going on and we are all fortunate to have so many members at work on committees and other projects that are making things happen.

So what is going on you may ask? Well where do I begin? Kevin, VA3KGS our Field Day Coordinator, is busy organizing our upcoming field day in June. Kevin is doing a lot of work, but along with Kevin are many others who are helping coordinate equipment, logistics and volunteers. We have a good initial volunteer list so if you have been to field day in the past please join us. For the new hams who never have been at field day, it is a great learning opportunity and lots of fun.

John Lorenc, VA3WMM, has been hard at work with our repeaters and with the infrastructure committee. John has spearheaded the committee but has gotten a lot of help from many members that are too long to list. The IRLP/ Echo-link connections are up and running on the VE3WCD repeater. The committee has sent out a survey to members about our repeaters. Please take a few minutes to complete the survey if you haven't done so already. I might mention we are also looking for a location to put our 440 repeater back on the air. We have a couple of leads and will keep you posted.

Phil, VE3ACK, finished up his new ham class and has successfully tested a couple more additions. So far this year we have nine new hams into NPARC. Please be a formal or informal Elmer and help out these new hams. We are planning our next class to start in September or October.

John Eagle, VE3HWE, has been busy lining up some summer demonstration days to show off ham radio around the region. We have several special events and ham radio demonstration days planned during the summer months. Again, we will need volunteers to help out. Watch the Feedline and emails for information on all the upcoming events.

The ARES committee has completed its work and has made the motions to the club regarding ARES and some updates to the existing bylaws. We will be voting on these motions at this month's meeting. If the motions pass, we will

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Previous Meetings Minutes — Kaitlynn, VE3AU0

20180308 General Meeting
Royal Canadian Legion, Branch 613, Fonthill, ON
Meeting was called to order by President Steve VA3FLF

Roll Call

31 Members and 1 guest

Meeting Introduction

Steve, VA3FLF started the meeting by first speaking about the ham classes to Phil. He expressed a thank you to Phil for the ham class success and how well they have gone.

Steve, VA3FLF – addressed that he desired to have the meeting use a short business meeting model. The meeting should be less than 1hr

Steve, VA3FLF - mentioned the forums on website for communications between members. They will provide a quick way for members to discuss club business with each other.

Reports

Steve, VA3FLF - mentioned that the committee reports were published in the Feedline.

Kaitlynn, VE3AU0 - gave short and concise treasurers report. Club is financially stable with normal monthly expenses. Jim, VE3BCA motion to accept. Seconded. All in favor

Minutes

Lloyd, VE3ERQ - Read short previous minutes. Jim, VE3BCA motion to accept, Seconded. all in favor

Old business

Kaitlynn, VE3AU0 – Discussion regarding Hamfest final reports.

Steve, VA3FLF - Executive had meeting with some software training on email system, document library use and CRM use.

Kevin, VA3KGS – Gave a talk on Field Day. Investigate different locations. Kingsbridge Park Chippawa, Burgoyne Woods in St. Catharines. Needing band captains. Band captains are responsible for all aspects of their band, power, radio, antennas. Food to be discussed later. Contact Kevin, VA3KGS to participate in Field Day. Oscar, VE3PIO asked lots of questions on various topics including the club equipment radio status.

New Business

Steve, VA3FLF - Public displays of ham radio – John Eagle, VE3HWE and Steve, VA3FLF to pick events. Learn your ham radio “elevator speech”. Use these to bring in more students.

Steve, VA3FLF - 70th Anniversary event is a go at the Legion. Jim, VE3BCA was asked about first mtg. Celebration to be on Thursday, September the 13th although Steve is to check into having it on the Saturday the 15th instead.

Kaitlynn, VE3AU0 – Certificates for Big Event helpers

Previous Meetings Minutes cont... — Denis, VE3XC

Steve, VA3FLF – NPARC/ARES motion from last meeting. Committee formed and has recommendation to the club. Recommendation - Bylaw update needed to perform ARES integration motion. Other general updates to bylaws to be performed at same time. Bylaw amendment process discussed at the request of Oscar, VE3PIO. Kevin, VA3KGS requested earlier publishing of the update notification to give members lots of time to ponder the proposed changes. David, VE3RNF and Kaitlynn, VE3AUO took the floor to present motions with help of PowerPoint presentation. First motion regarding ARES and NPARC. Motion: “That section 3.f) be amended & sections 7.3 & 14 be added as shown in the proposed bylaws” Seconded by Jim, VE3BCA. Kaitlynn, VE3AUO took floor to explain second motion regarding general neutrality, spelling errors, etc. Motion: That the bylaws be updated to reflect societal norms and to be in line with past practices. That misuse, spelling & redundancy errors be corrected. Seconded John, VE3HWE. Dave, VA3UL asked question regarding “Who will ARES answer to?” Answers to RAC. Steve, VA3FLF gave detailed explanation/answer.

50/50 Draw

No 50/50. Lloyd, VE3ERQ forgot bucket.

Phil, VA3ACK took floor. Brought up and discussed Ontario QSO party and the new hams.

Motion to close meeting – Phil, VA3ACK

Minutes by Treasurer, Kaitlynn, VE3AUO as transcribed from meeting recording.

Presidents Message Cont... — Steve, VA3FLF

have a lot of work to do getting Niagara ARES integrated with us. This will include a Standard Operating Policy, SOP, and coordinating with regional Emergency Services.

We have decided to use groups.io as the NPARC forum site. The group is up and running at nparcgroup@groups.io. This is a closed group to club members only, but it is a good method to post questions and gather information about amateur radio. I would encourage everyone to join and it would be a very efficient way that the new hams can ask questions and receive help.

Finally, I want to take a moment to remember a former club member, John Faber, VE3CNF as a Silent Key (SK). I found a couple of old Feed Line articles about John and his wife. Also, I would also want to pass my condolences to Denis Grantham, VE3KVE, for the passing of his wife Audrey. Please keep Denis in your thoughts and prayers.

By the way, someone asked about my accent on the air the other day. I didn't think I had an accent, hi!

Steve

VA3FLF

Reports

Treasurer's Report — Kaitlynn, VE3AU0

As for the club finances, there have been no large or major expenses for this period. Pretty much most of the expenses that happened recently were attributed to the Big Event and are accounted for in the report. Only standard expenses were incurred otherwise.

Our GIC is doing the same as usual for what it does and will come to maturity again later this year.

See you all at the meeting.

Kaitlynn

2017-2018 Treasurer



SATERN Report — David, VE3FOI

Nothing to report.

73 Dave VE3FOI SATERN Niagara Rep,

CANWARN Report — Brian, VE3BMX

See attached for CANWARN

Brian VE3BMX

ARES Report — Henry, VA3OV

Nothing to report.

Henry VA3OV

Field Day Report — Kevin, VA3KGS

June 23-24 we will be sprawled across the Upper Park at Balls Falls once again. This site location has proven to be a winner for us over the last 5 years. As of now it looks like we are going to have a great turnout once again. Band Captains are responsible for just about everything. They need to start filling in their roster from the list of people wanting to participate, get shelter, table, chairs, antenna, radio, computer, extension cords, power bars, GFCI protection device, etc.....We need to coordinate getting 4-6 generators (+Gas), and looks like we will get catered food in from Antipasto's once again. The Club has on hand 2 GFCI cord sets, a few tables and chairs that can be spoken for. There are also 2 tents, and one Butternut all band vertical antenna.

See sign-up sheet for names of band captains and helpers, and if you can participate in operating a station or setting up then indicate what you would like to do.

Any logging program can be used, as long as the data can be saved in Cabrillo or ADI formats. We are not required to submit logs but be able to do a final count for each band operated on.

Kevin Smith,
Va3KGS, 2018 Field Day Coordinator



Silent Key Report

Faber, John Anne (1934 – 2018) – Passed away peacefully at the Henley House on March 13, 2018 at the age of 83. John was the beloved husband of Shirley. He will be greatly missed by daughters Joan (Steve) DiStefano, Joyce (Lorne) Winther, son Richard (Dawn Ann) Faber, step-daughter Susan (Will) Janzen, step-son Al (Debbie) Nojonen. Will be missed by his 11 grandchildren and 6 great grandchildren. John is also survived by Klaske (Willem) Zwier, Hielke (Iepic) Faber, Geertje (Geert) de Vries and Joltje (the late Bart) Nijholt, all living in Holland. John is predeceased by his parents Dirk Faber and Hendrikje de Graaf as well as his first wife Geraldine (Winkle).



John retired from Dofasco in 1991 and spent many years as a member of the Ham Radio Club, call sign VE3CNF. Special thanks to the Henley House staff for their care on compassion.

Ground Conductivity Article — Phil, VA3ACK

The Ground's the Limit

Phil, VE3ACK

It's 0100 UTC. You walk into your shack. You turn on your rig. And as the speaker comes alive, you realize what is about to happen.

You hear the callsign. It's KH9NE.

If you can make the contact, you'll have the hundredth "country" you need to qualify for DXCC. This would be a major achievement for someone with just 100 watts and a pair of phased quarter-wavelength verticals on 20 metres.

At this point, you need to direct as much power as possible into the ionosphere. So, you have optimized your station based on your financial resources and your location. Or so you think.

You've minimized the run of coax between your transceiver and the antenna. You decided on verticals rather than a horizontal dipole because verticals have a lower take-off angle. The antennas' length is optimized for the 20-metre band. You've measured the SWR to ensure that the antenna matches to the coax. The two verticals are phased to produce a cardioid pattern. The array is pointed toward the Pacific. And according to the ARRL propagation charts, the band should be open to the Pacific.

Well, you thought you knew what was about to happen. But, in fact, KH9NE doesn't hear you. How is that possible?

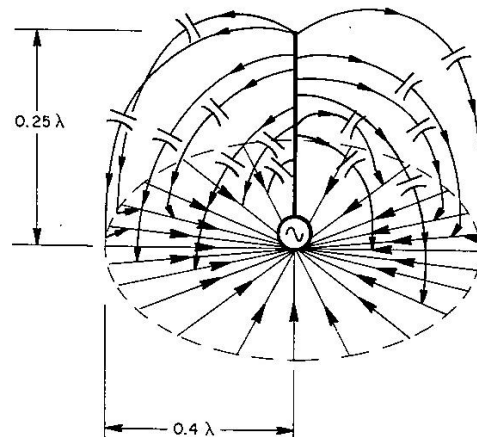
The problem is that while you think that you are radiating plenty of power, you may in fact be operating what essentially is a QRP rig.

The problem is that much of the power the antennas are radiating is being pumped directly into the ground where it is being dissipated rather than launched toward the ionosphere.

Figure 1 shows why this happens. The vertical radiator is capacitively-coupled to Earth. The current produced in Earth must flow back to the base of the antenna to complete the r.f. circuit. The r.f. circuit starts at the transmitter, moves through the centre conductor of the coax, up the antenna, across to the ground, through the ground to the base of the antenna and finally through the outer conductor of the coax back to the transmitter.

You can see from this that the actual resistance of an antenna system is a combination of the antenna resistance and the ground resistance.

If the ground system of the antenna consists of many radials, then the ground path resistance back to the base of the antenna will be low and the losses will be



Ground Conductivity cont. — Phil, VE3ACK

low. Conversely, if the ground system has only a few radials, then the current must travel through poor soil back to the base of the antenna and consequently the path resistance will be high and the losses will be high.

Notice in the diagram that the induced currents fill a circle which extends outwards from the base of the antenna for about 0.4 wavelength.

There are two issues at play. First, we are operating amateur radio stations. We are not commercial broadcast stations nor are we military stations. In these two cases, neither money nor real estate is a factor. Consequently, engineering principles win every time.

In an amateur radio station, financial constraints and limited property are often factors. As a result, we need to make compromises.

The solution to reducing the ground resistance is simple, but not necessarily inexpensive.

At a commercial broadcast station, it is not uncommon for an antenna to be equipped with 120 radials. The radials are $\frac{1}{2}$ wavelength long (remember Figure 1 shows that the ground currents extend out 0.4 wavelength) and the far ends are grounded to rods driven into the soil. In addition, stations often use a ground screen or a ground plate directly under the antenna.

For most of us, this is simply impractical.

However, we do create our own problems. We solve the radial issue by adopting a “one size fits all” solution. Without any regard for the outcome, we simply use three or four radials as the ground system and hope for the best. We also prefer radials that are a quarter wavelength long rather than the 0.4 wavelength or 0.5 wavelength mentioned previously. On the “plus” side, the ground rods used by commercial stations at the end of each radial can usually be replaced by spikes in an amateur radio installation because generally the currents are limited to the top 5 cm of soil.

Figure 1

A simple radial system probably works well in a location such as Nassau, Bahamas where saltwater waves from the Atlantic Ocean lap the shore and winds deposit salt water on the soil. At the opposite end of the spectrum, there are places in Ontario where rock is the predominant feature and a counterpoise is required. [A counterpoise is a network of wires placed a slight distance above the ground and insulated from it and arranged so the network produces a very high capacity to ground.]

Clearly, the effect of an extensive ground system is more pronounced in the case of poor soil than in the case of good soil.

The second issue is that we are lulled into a false sense of security when we use an SWR bridge. Many amateurs believe that the SWR bridge is an indication of the antenna resistance compared to the coax impedance. That is, if the antenna feedpoint resistance is 52 ohms and the impedance of the coax is 52 ohms then the SWR is 1:1. An SWR bridge doesn't do that. It measures the antenna system resistance compared to the coax impedance. The antenna system resistance includes both the antenna resistance and the ground resistance. So ... if you have an antenna with a resistance of 20 ohms and a ground resistance of 32 ohms, then the antenna system resistance will be 52 ohms – an SWR of 1:1. However, as in

Ground Conductivity cont. — Phil, VE3ACK

all series circuits, the larger resistance will dissipate a greater amount of power. In this example, more than half the transmitter power will simply heat the ground! And if that's not bad enough, consider what happens if the antenna resistance is 20 ohms and the ground resistance is 40 ohms. The SWR will still be acceptably low (1.15:1), but now the ground resistance will dissipate even more of the transmitter power. I should point out that the situation is even worse for bottom-loaded, short verticals than it is for quarter-wavelength verticals. This occurs because the radiation resistance of a short vertical is less than the radiation resistance of a quarter-wavelength vertical. Therefore, in a given location, the ground resistance represents a larger part of the total antenna system resistance.

So, there must be a realistic compromise between every amateur station being equipped with 120 radials plus ground rods and the basic ground-heating system that uses a few radials. Certainly, there are a few amateurs who need 120 radials (those living on the Canadian Shield?) to use their transmitter power effectively and there are others who can get away with just a few radials (perhaps those living in Prince Edward Island?).

The real question is: Where do you fit in? Should you be using 120 radials? Probably not. Can you get away with only 4 radials? Probably not.

The answer is: Measure the ground resistance. (Well, actually, measure the ground conductivity. You remember, of course, that conductance is simply the reciprocal of resistance.)

While there is data available for typical ground conductivity measurements in various types of soil, the question still remains – Where do you fit in?

Have a look at Figure 3 at <https://www.eoas.ubc.ca/ubcgif/iag/foundations/properties/resistivity.htm>.

First of all notice that the scale at the top of the diagram shows resistivity with 0.01 ohms-metre on the left and 100,000 ohms-metre on the right. Compare that to the bottom scale which shows conductivity with 100,000 millisiemens/metre (mS/m) on the left and 0.01 millisiemens/metre on the right. That is, as *resistivity increases* from left to right, *conductivity decreases* from left to right. You can see from the diagram that the *conductivity* of the unweathered igneous and metamorphic rock of the Canadian Shield is low. However, the salt water of The Bahamas or Prince Edward Island has high conductivity. Notice too that there are ranges not single values for the conductivity of specific soil types. The ground conductivity of clay, for example, ranges from 500 mS/m to 10 mS/m.

However, this still doesn't indicate where you fit in. Should you install 20, 40 or 60 radials?

To help you to make that decision, NPARC will conduct a series of measurements to determine ground conductivity. But those measurements by themselves still won't answer the question. To get a complete picture, we will enlist the assistance of other amateurs. We will measure ground conductivity in each of the following regions:

- flat, fertile, rich farm land

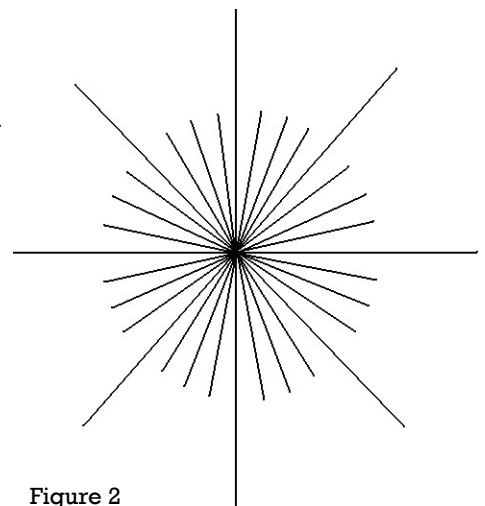


Figure 2

Ground Conductivity cont. — Phil, VE3ACK

- average soil
- flat, dry, sandy soil (desert)
- residential area (town)
- residential area (city)
- industrial area
- fresh water area
- coastal area (salt water)

I know, there is no desert near Niagara Falls. And the Grand River isn't salt water. To be honest, I'm not sure that there is any fertile, rich farm land in the area. To get around those problems, we've enlisted other clubs. For example, the University of Arizona ARC will take the measurement in the Sonora Desert. And Robert, V31AE, belongs to the Belize ARC and lives on the Caribbean coast in Belize, so he will take the salt water measurement.

Armed with the data that we collect, we will be able to create a scale. And, yes, the guys at the University of Arizona probably would benefit from 120 radials while Robert, V31AE, could probably get away with 2 or 3. We will fit somewhere in between.

While the vertical antennas of the imaginary station have been the focus of the analysis, that's not to say that horizontal dipoles are immune to these effects. As Woodrow Smith points out in *Antenna Manual*: As the height of a horizontal dipole is reduced below 1/8 wavelength (typical for 160-, 80- and 40-metre dipoles), the ground losses become appreciable. A dipole strung at a

height of 1/10 wavelength over a screen of wires parallel to each other and to the antenna will, in general, be about 5 dB better than a much higher antenna with no ground screen. (See Figure 4.)



Figure 4

Based on the numbers we collect, we should be able to determine a reasonable number of radials that will allow us to use our transmitter power to make contacts rather than to heat our backyards.

Captions

Figure 1 – The antenna induces ground currents in a circle around the base of a vertical antenna. The losses in the ground are dependent on the soil type (ground conductivity) and the effectiveness of the ground system.

Figure 2 – There are many options when constructing an effective ground system to reduce losses. The 120 radials used in commercial installations can be replaced with several long radials interspersed with shorter radials. How many radials are needed depends on the ground conductivity. A counterpoise is another option.

Figure 4 – Practicalities often limit the height of horizontal dipoles for 160-, 80- and 40-metre horizontal dipoles. A ground screen below the antenna can reduce ground losses and improve antenna performance substantially.

World Radio Day — John, VA3WM

World Radio Network/World Friendship Net Announces World Amateur Radio Day 2018

For the 4th straight year.

Rochester, NY., March 9, 2018: THE WORLD RADIO NETWORK and THE WORLD FRIENDSHIP NET today announced that for the 4th straight year, we will be participating in WORLD AMATEUR RADIO DAY 2018 ON VOIP/ECHOLINK on the WORLD CONFERENCE SERVER/IRLP 9251. APRIL 18TH, 2018. We are part of NARRI/Nevada amateur radio repeaters, inc. Kent Johnson/W7AOR is the primary trustee of this organization.

In 2018 we are proud to announce for the first time ever we will have a special event call sign "W2W" been secured for this event. As well as we will have a commemorative special event "WORLD AMATEUR RADIO DAY 2018" QSL Card. We will have a 12 hour net with 8 different net controllers from all over the world. We will have 3 special guest check in throughout the event.

The 2017 event, We recorded over 426 check ins, 45 International stations, 23 countries, 125 new check ins. The net lasted 12 hours and 15 minutes, with 6 net controllers. We had over 310 QSL card request. The net ran for 12 hours plus with 6 different net controllers doing 2 hour shifts. We also had a special event qsl card that was available upon request. We were happy to announce that last year's net was the LARGEST event on VOIP/ECHOLINK.

As Special event coordinator for the THE WORLD RADIO NETWORK and THE WORLD FRIENDSHIP

From the Repeater Manager — John, VA3WM

A weekly net is conducted on the Club's VE3NRS repeater, 147.240 MHz, positive 600 kHz offset and 107.2 Hz tone, commencing at 19:00 local time.

The purpose of the net is to pass news and views along to members and visitors to the club. It also provides experience to volunteer operators in net and emergency operating procedures. New net controllers are most welcome (training provided). Not yet certified SWL's may check in by e-mail to netcontrol@nparc.on.ca.

2018	Mar	5	David VE3RNF
		12	Dave VE3FOI
		19	John VA3WM
		26	John VA3WM
	Apr	2	David VE3RNF
		9	Dave VE3FOI
		16	John VA3WM
		23	David VE3RNF
		30	Dave VE3FOI
	May	7	David VE3RNF
		14	Dave VE3FOI
		21	John VA3WM
		28	Dave VE3FOI
	Jun	4	David VE3RNF
		11	Dave VE3FOI
		18	John VA3WM
		25	John VA3WM

Items in red are slots that are open if needed.

World Radio Day cont...— John, VA3WM

NETnone of this could have possible if not for the over 426 check ins and the 6 great net controllers who took time out of their day and contributed time for this event.

W2JLD-John, Special Event Coordinator for the World Radio Network and The World Friendship Net. KM400C - Mike, Net Manager and KD8TBC - Lee, Asst Net Manager for The World Radio Network and The World Friendship Net. WH6DWF - Todd, System admin for the western reflector, N7HVN - Cathy, NCS for WORLD RADIO NETWORK.

So please join us again as we celebrate amateur radio all around the world on APRIL 18TH at 16:00 UTC (12 NOON EST, 9AM PST) via ECHOLINK on the "World" Conference server (IRLP 9251)for the 4th annual "WORLD AMATEUR RADIO DAY 2018" as we celebrate this special event. We will again have a special event QSL card available upon request. We will have a 12 hour net with 8 different net controllers from all over the world.

Be part of something that's bigger than all of us ,Let's make WORLD AMATEUR RADIO DAY 2018 one of the largest special event nets on ECHOLINK ever!!!

BELOW IS MORE INFO:

World Radio Network: Special WARD IRLP/ECHOLINK Net

16:00 -17:30 (12 NOON EST, 9AM PST) UTC via the World Conference server (IRLP 9251) W2JLD, KM4OOC, KD8TBC,N7HVN, KB3JUF, WH6DWF Net Controllers. All stations from around the world are encouraged to check in.

World Friendship Net: Special WARD IRLP/ECHOLINK Net

00:00 - 01:30 (8PM EST, 5 PM PST) UTC via the World Conference Server (IRLP 9251)

W2JLD, KM4OOC, KD8TBC,N7HVN, KB3JUF, WH6DWF Net Controllers. All stations from around the world are encouraged to check in.

EMAIL ANY QUESTIONS TO:

JOHN DERYCKE - W2JLD

W2JLD2@GMAIL.COM

MIKE HIGGINS - KM4OOC

KM4OOC@GMAIL.COM

Club Executive 2017-2018

Position	Name	Callsign	Email
President	Steve Riddle	VA3FLF	president@nparc.on.ca
Vice-President	Lloyd Kubis	VE3ERQ	vice-president@nparc.on.ca
Secretary	Denis Surek	VE3XC	secretary@nparc.on.ca
Treasurer	Kaitlynn Mattatall	VE3AUO	treasurer@nparc.on.ca
Bulletin Editor	Rachel Barnsdale	VA3NMC	feedline@nparc.on.ca
Public Relations Officer	John Eagle	VE3HWE	public_relations@nparc.on.ca
Repeater Committee Chairperson	John Lorenc	VA3WM	repeaterchair@nparc.on.ca

Feel free to check out our website at <http://www.nparc.on.ca>. There you will find more information regarding the club and the other dedicated members that put in numerous hours of their own personal time to help make this club as great as it is.

NPARC Repeaters

VE3NRS	147.240 MHz +	PL Tone 107.2 Hz
VE3RNR	443.175 MHz +	PL Tone 107.2 Hz
VE3WCD	147.300 MHz +	PL Tone 107.2 Hz

Area Repeaters

VE3RAC	147.165 MHz +	PL Tone 107.2 Hz
VE3GRW	442.900 MHz +	PL Tone 107.2 Hz
VE3RAF	442.250 MHz +	PL Tone 107.2 Hz

This is by no means a complete listing. This is just a snippet of all that are available and ones used by club members on occasion.

Nets of Note

- ONTARS 80m Net / 3.755 MHz LSB daily 7:00 A.M to 6:00 P.M. EDT
- CLARA 80m Net / 3.750 MHz Mondays 7:00 P.M. EDT
- GWEN-Ground Wave Net on the 1st and 3rd Monday of the month at 7:30 P.M. EDT on 3.607 MHz
- NPARC 2m Net /147.240 MHz on Mondays at 7:00 EDT
- ARES 2m Net /145.190 MHz on Mondays at 8:00 P.M. EDT
- SATERN Net on 2m /147.300 + MHz / IRLP on Mondays at 9:00 P.M. EDT
- NPARC 10m Net / 28.415 MHz on Tuesdays, 8:30 EDT
- CLARA 20m Net / 14.120 MHz on Tuesdays at 1700 UTC & 40m Net / 7.055 MHz at 9:00 am Eastern
- PROCOM—ARES 40m / 7.153 MHz & 80 M / 3.74 MHz on Thursdays at 8:00 P.M. EDT

Niagara Peninsula Amateur Radio Club, Inc.

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Amateur Radio - When all else fails!

We're on the web
<http://www.nparc.on.ca>

The **Niagara Peninsula Amateur Radio Club** carries the club call sign of VE3VM. Our organization serves all amateurs and local community within the region of Niagara located in Ontario, Canada.

NPARC has a strong membership ranging from youth and senior amateur radio operators. We conduct monthly meetings, and serve the community in not only educating, but providing radio communication services to assist at public functions.

We operate three, commercially built repeaters that serve the Niagara region (and beyond). This year, our infrastructure plan includes several upgrades to increase communication flexibility and experimentation in the area.

If you're interested in becoming a licensed operator in Niagara, email one of our executive. Somebody from the club would be more than glad to assist you!

General Meeting Schedule for 2018

Meetings are held monthly, September to June,
on the 2nd Thursday of the month at 7:00 pm
Royal Canadian Legion Hall, Branch 613, 141
Hwy 20 East, Fonthill, Ontario. All are invited to
attend.

**Thursday April 12th, 2018—Next
General Meeting**