



September 2023 Newsletter

Seaway Valley Amateur Radio Club

The **Seaway Valley Amateur Radio Club** is a 'not for profit' organization incorporated in the Province of Ontario that promotes Amateur Radio and provides Auxiliary communication Services in Cornwall and surrounding area. The Club's mailing address is 4672 O'Keefe Road, St. Andrews West, ON. K0C 2A0.

The **Seaway Valley Amateur Radio Club** operates several repeaters in Cornwall and surrounding area. For a detailed list of repeaters operated by the club please visit our website at SVARC.ca.

- **President:** Earle DePass (VE3IMP)
- **Vice-President:** Joe Scott (VE3ADB)
- **Secretary:** Roger Bélanger (VA3GBV)
- **Treasurer:** Chris Lauzon (VA3CRR)
- **Technical Director:** Doug Pearson (VE3HTR)
- **Net Manager:** Earnest Vinson (VA3EWW)
- **ACS Coordinator:** Earle DePass (VE3IMP)
- **Newsletter:** Roger Bélanger (VA3GBV)

In this issue:

President's Message

Note from the editor

Show and Tell:

Carp Hamfest

Repeater Work

René's interesting links

The Geek's Corner



**Earle
VE3IMP**

President's Message September 2023

SVARC President's Message September 2023

The shorter days, cooler nights and brilliantly coloured leaves tell all that Fall is coming. While the cooler months approach, there's still time for antenna work!

A warm welcome to our two newest Amateur Radio Operators Jeff Bilyk and Brendan Bronzan who recently passed the HAM exam!

If you have not been on the morning Cornwall Coffee Commute, you have been missing a fun time! Earnest has got something new going on...maybe give it a listen?

Our next Coffee Klatch at *Spinners* restaurant takes place this Saturday. I hope you come out and enjoy the fellowship.

Earnest (VA3EWV) has been doing a great job as our new Net Manager. How about you take a turn at being the Net Controller one Monday and give Earnest a break?

Our last Fox Hunt was cancelled due to illness in Steve's (VE3EZB) family. We wish Mireille well and a speedy recovery. We look forward to the next Hunt when Steve (VE3EZB) and his team will hide the Fox—yet again!

The the MS Bike ride on August 19 and 20, 2023 went well. Thanks to Roger and Dan for participating.

We hope to see you at our next hybrid meeting planned for September 27, 2023 at *St. John Ambulance*, Cornwall. I hope you continue to enjoy every warm bit of summer!

Happy HAMming!

73,

Earle DePass (VE3IMP)

President, SVARC (2022-2024)



**Roger
VA3GBV**

Note from the Editor

1. September edition.

By the time you read this, summer is about to be over. But good weather is still with us and the fall colors are just about to bloom.

For those who wish to know, fall will arrive Saturday September 23, at 6:50 EDT.

2. CARP Hamfest

Several club members attended the CARP Hamfest this year. This a great opportunity to socialize with hams from other club and to get goodies for the shack without breaking the bank. Read Earnest (VA3EWV) account of this years edition on page 4.

3. The Geek's Corner

I am adding a new section to the newsletter, called the Geek's Corner. When you read it you will understand why I called that. As René was saying in the Summer Edition: "The proper meaning of amateur radio is experimentation". So, this section will be about experimenting, building stuff, understanding the equipment we use and new technologies.

You are all welcome to contribute to this section and write about what you use, build, program or design.

4. Election year

This year is election year for the Seaway Valley Amateur Radio Club.

The present executive has served a 2 year term. As per our by-law a nomination committee will be appointed and announced at the September 27 Club Meeting. The purpose of the committee is to propose a slate for a new executive at the October Club Meeting. This committee will contact the members to seek volunteers to act on the executive committee for the next two years. Please consider it, it is a great experience and an opportunity to bring new blood and new life to the Club.

The slate will be presented at the October meeting giving each of us time to make-up our mind and prepare to vote at the November meeting.

5. On a deeper note:

Well done is better than well said. -
Benjamin Franklin

Show and Tell

2023 Carp HamFest



Friends and Club members who attended the 2023 CARP Ham fest:
From left to right: Clifford Sutton-VE2YU, Earnest Vinson-VA3EWW, Robert "Bob" Lavigne-VA3JIN, Larry Giguere-VA3RSQ, Marshall McBride-VE3SX, Dean Brush-VA3BS, Rudy (Rudolph Samlal)-VE3RZU, Claude Everton-VE2YI.
Not on the picture: Jason-VE3PRY, Marshall-VE3SX, René-VA3RIA, Steve-VE3EZB, Doug-VE3HTR.

Recap by VA3EWW–Earnest Vinson

The Carp Hamfest has been drawing crowds since 1997 and is put on by the Ottawa Amateur Radio Club and is currently being held at the W. Erskine Johnston Arena.

As a new Amateur of only 9 months, the Carp Hamfest has been the largest event that I attended (the Iroquois Hamfest being the first) and over the past couple of months, there was much talk and excitement leading up to the event and it didn't disappoint.

Several club members had been mentioning this event at the club meeting as well as on our new Morning Net called the "Cornwall, Coffee, Conversation and Commute"

morning radio rag chew and before you knew it, we were getting carpools set up as well as lunch plans and other activities to be held after the event.

Getting there was fun, and we even enjoyed some chatter on simplex on the way, Doug stopped in Iroquois and picked up his buddy, Steve brought Colin, Jason picked up Rick B, Bob picked me up, Dean grabbed Marshall and Larry, VE2YI Claude and Clifford and Rudy carpooled together.

The event didn't disappoint, they had a good show of commercial vendors (seen in the chart below), RAC was present, and they even had testing stations set up so that you could get licensed at the event. There were loads of hams with tables as well and lots of treasures that quite a few of the club members snagged to add to their shacks.

Jason managed to take home a nice headset that he quickly connected and used on the net following the event and Rick (VA3KCB) grabbed him an antenna switch and Bob found a nice receiver from years gone by (see photos below).



VA3JIN's Haul—Shown Above



VA3KCB's Antenna Switch

I didn't find anything that interested me on this trip except for the eight, delicious Red Lobster biscuits that I had because I don't eat seafood or steak and at the Iroquois Festival, I made off with a bowl of chili a hotdog and a pop lol, clearly, I'm going for the food and fun!!

In closing, attending the Hamfest is like going to a family reunion, loads of stories, lots of fun, good fun and lots of treasures to take home with you.

Commercial vendors

As of 2023-08-26, the following commercial vendors have confirmed their attendance:

[Degen Designs](#)

[Gérald Lemay Study Books](#)

[Icom America](#)

[Macfarlane Electronics](#)

[Netty Electronics](#)

[Premier Communications/Anytone](#)

Repeater work

This all started when it was decided to decommission the Cornwall APRS node. This node proved ineffective, and redundant to the VE3PGC-1 APRS Node in Bonville, as APRS mobiles even within the City of Cornwall would be received and relayed by Bonville instead of Cornwall.

So, to reduce the amount of RF on the CCH rooftop, and to eliminate one more potential intermod source at the site, the VE3SVC-1 APRS node was decommissioned in 2022.

This meant the North Diamond X-200 dual band antenna was only being used for UHF, so the VHF/UHF Diplexer was no longer needed and was removed from the signal path.

Club member Rene Champagne (Premier Communications) offered us a a UHF four bay folded dipole array (Similar to a Sinclair SRL-310A4) at no monetary cost to the club,

So, since we were to replace our old VE3SVC 147.180 antenna with a brand-new Jag RF 144-2-EX, we decided to also replace the North Diamond X-200 on the same site visit, which Roger VA3GBV, Dan VE2JMF, Jason VA3PRY and myself on Tuesday, August 29th. Upon examination of the X-200 antenna removed, while it was still electrically sound, it was very weather worn mechanically, with a deteriorated gel coat on its fibreglass radome, and had missing stainless steel mounting hardware. While these Diamond/Comet style antennas are good choices for a home station, they are perhaps, in retrospect, not the best choice for a hostile environment like a rooftop repeater site.

The new VA3EDG antenna provides better coverage than the old Diamond antenna, and being a proven commercial design, should provide greater longevity than the amateur grade Diamond antenna. However, its equivalent wind load area and resultant wind side thrust (57 lb./26 Kg.) is significantly greater than that of the Diamond antenna (no rating available) and thus requires a larger, more robust mounting mast. So, the mast was replaced with a 2.0" i.d. heavy wall aluminum electrical conduit.

It should also be noticed that the new VHF antenna on VE3SVC showed significant performance improvement as was experienced on the Monday night nets.

The South Diamond X-200 antenna (VA3SDG VHF and UHF) was installed at the same time as its North twin, and will have weathered similarly. Further inspection of this antenna indeed showed serious weathering on both the antenna and cable. It is expected that it will need to be replaced in the spring.



Dan (VE2JSF) holding on the the new VA3EDG antenna, and Roger (VA3GBV) holding on to the new VE3SVC antenna.



The white hat, Doug E3HTR.

And the crew, Jason VE3PRY, Dan VE2JSF and Roger VA3GBV

René's interesting links

From Canadian Geographic: Ham radio and the world of amateur radio operators:

<https://canadiangeographic.ca/articles/ham-radio-and-the-world-of-amateur-radio-operators/?fbclid=IwAR0PgCOBolfZ9m2MExuSih0BXNJtrCVI0XlrC0eIO1y0Ws5W9kAy6Mi8-w8>

Quansheng UV K5 HT : <https://www.youtube.com/watch?v=7O5WgxQj4wM>

A Raspberry pi based cyberdeck: <https://hackaday.io/project/191890-hamdeck-cyberdeck>

The Geek's Corner

All you wanted to know about quarter wavelength impedance transformers.

By VA3GBV

What is it?

A quarter wavelength impedance transformer is simply a piece of coax with a length of a quarter wavelength at the operating frequency.

For example, a LMR 400 coax used at UHF at 440 MHz will be:

$$\frac{1}{4} * \frac{C}{F}$$

Where C is the speed of light in the cable (LMR 400 has a velocity factor of 83%).

F is 440 MHz

So, our quarter wavelength transformer would be 20.5 cm

What is it used for?

As the name implies, it is used to match a load of a given impedance to a standard transmission line impedance.

For example, it is currently used to match a 300 Ohm folded dipole to a standard 50 Ohm coax cable.

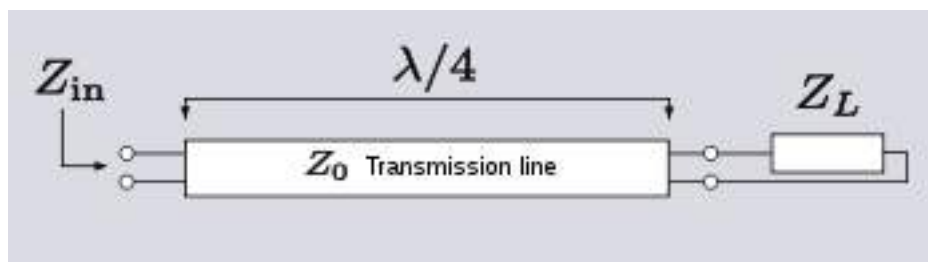


Figure 1

This is how our folded dipole repeater antennas at CCH or Bonville are built. See figure 3.

How does it work?

Now that is the interesting part, and it is simpler than you might have thought. Look at the following diagram:

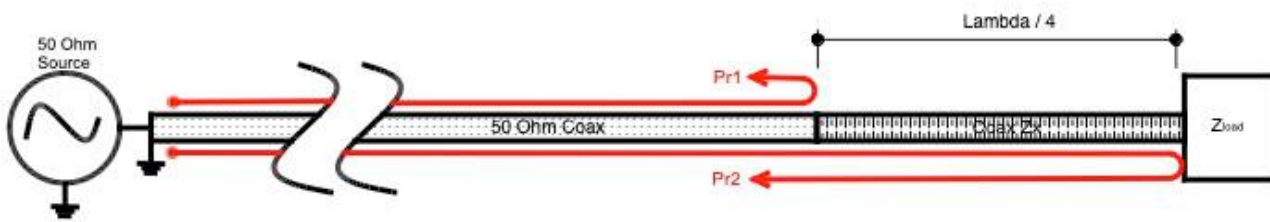


Figure 2: Quarter wavelength matching coax

We are trying to match a 50 Ohm transmission line to a load with a different impedance of Z_{load} .

If we put a quarter wavelength coax of characteristic impedance Z_x between the transmission line and the load. We will end up with two reflections because of the mismatch between the 50 Ω line and the $\lambda/4$ coax and the mismatch between the $\lambda/4$ coax and the load.

P_{r1} : Reflection from the mismatch between the 50 Ω line and the quarter wave coax

P_{r2} : Reflection from the mismatch between the quarter wave coax and the load.

Since the signal from the source has travelled an extra $\lambda/4$ to reach the load, and its reflection (P_{r2}) has travelled another extra $\lambda/4$, then P_{r2} and P_{r1} will be 180 degrees out of phase..

If we can make them the same amplitude, they will cancel each other, and we will see a perfect match from the 50 Ω source.

The question then is what is the impedance of the $\lambda/4$ coax needed to make the two reflected signals the same amplitude?

In our basic amateur radio course, we all learned about VSWR, impedance mismatch and reflection coefficient resulting from a mismatch.

The reflection coefficient, symbolized as Gamma or Γ is expressed as:

For the reflection P_{r1} :

$$\Gamma_1 = \frac{Z_x - Z_0}{Z_x + Z_0}$$

For the reflection P_{r2} :

$$\Gamma_2 = \frac{Z_{load} - Z_x}{Z_{load} + Z_x}$$

If we make both coefficients equal so that the two reflected signals cancel each other:

$$\Gamma_1 = \Gamma_2 = \frac{Z_x - Z_0}{Z_x + Z_0} = \frac{Z_{load} - Z_x}{Z_{load} + Z_x}$$

Now just dust off you high school algebra, it is not that hard!:

Solving for Z_x we get

$$Z_x = \sqrt{Z_o * Z_{load}}$$

Example

In figure 3 below, we can see a typical folded dipole used in VHF or UHF communication systems. This antenna uses the $\lambda/4$ coax match method to match the folded dipole with characteristic impedance nearly equal to 300Ω to a 50Ω RG-213 coax.

As shown above, the ideal matching coax impedance would be:

$$Z_x = \sqrt{50 * 300}$$

Or 122.5Ω

The closest coax available is RG-63 with a characteristic impedance of 125Ω . Close enough to give a good VSWR at the operating frequency.

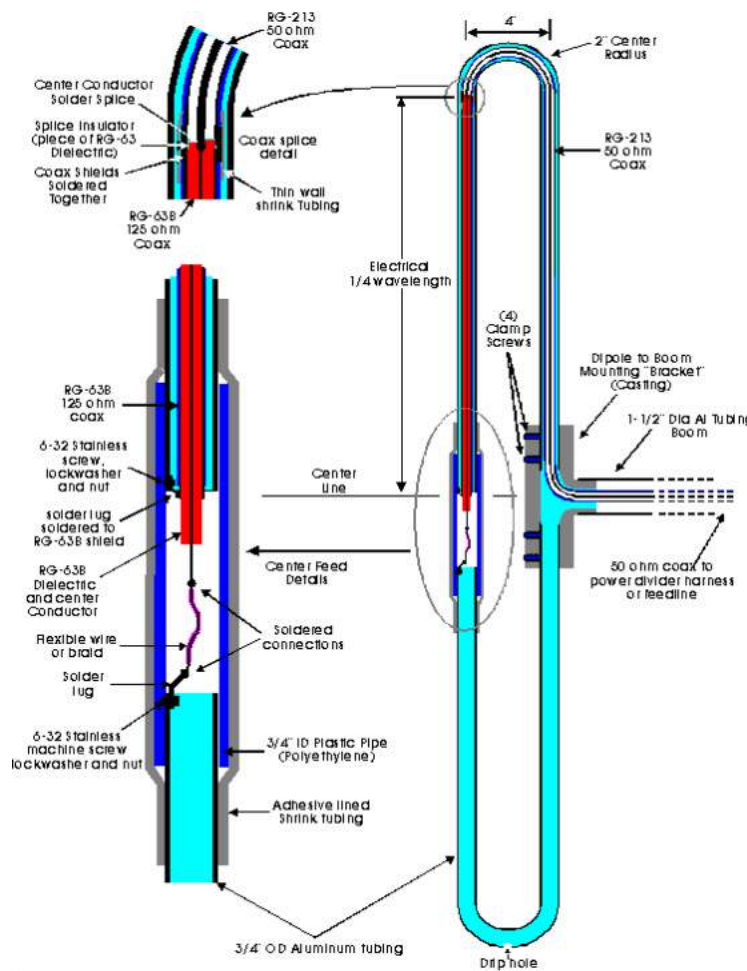


Figure 3 Sinclair style folded dipole configuration

Caveat

A coax cable is a quarter wavelength long at only one frequency!

If we gradually change the frequency, our coax is no longer $\lambda/4$. The two reflected will depart for being 180 degrees apart. Then they will not cancel each other perfectly.

In practice we can show that over a 20% bandwidth the VSWR will remain below 1.5:1

One could even tolerate a VSWR of 2:1 which has a power through-put of 90%.

But if you want to match a multiband antenna you will need another matching device like a balun, but more on this at another time...

p.s.: Many thanks to Doug Pearson (VE3HTR) who introduced me to the detail design of commercial folded dipoles.