



# WEST RIVER RADIO CLUB

## DIGITAL DISPATCH

### September – 2006



**Volume 1**

**Issue #8**

**The West River Radio Club, an ARRL affiliated club, was founded in 2004 through the efforts of KA1ZQX, Tim Bell, and N1JSG, Richard Pierce.**

**Our forty four members pride themselves on belonging to an active and productive organization with involvement in many aspects of this great hobby: public service, special events, Field Day, repeaters, emergency communications, contesting and chasing DX.**

**Current officers are:**

**N1TOX, John Borichevsky; President  
KD6MPY, Sean Sanderson; VP  
K1KU, Darrel Daley; Secretary/Treasurer  
KA1ZQX, Tim Bell, Pubic Relations**

## PRESIDENT'S CORNER

**September 2006**

*The Little Things in life.....*

I received a card in the mail the other day that made me smile and touched me deeply. It was not a humor card, it was not a birthday card, nor was it a business card. It was a serious card. This card was a Thank You card for something that I did. You see, I was only one of this person's instructors during our First Ever 2 Day Crash Course for the Technician License. I was the opening act for this two day marathon of learning FCC Regulations, operating practices, electronics and much more.

This was a new question pool for the VE Test. This was a new text book, which I had for only 2 days. I quickly put together a 42 slide Power Point presentation covering the FCC Rules and Regulations, operation procedures, frequencies and how to work out problems you could have with interference. I remember looking at this

person and praying for this person's success. To make sure everyone was understanding the information I was instructing, I started asking random questions. They were being answered by all, so I thought everything was going well.

The next day, I returned for the VE session. The hopes were there for a successful test day. I was grading the exams and saw that this person did not pass the test. Well, failure does happen to everyone now and then. For this 10 year old, taking a crash course to do something she got so excited in doing during Field Day 2006 for just 2 hours, this was a major accomplishment. She left the exam room with a smile on her face knowing that she did the best she could have. She told me that she will be back to take the test again.

Now, just one week later, I get a Thank You card in the mail. It was not just your typical Thank You card, it was an Amateur Radio Thank You card that she made herself. But it was much beyond this as it was done with dit's and dahs. Yes, it was in Morse code. This is the type of dedication one needs to learn a hobby we all love to enjoy. That is the learning level which needs to come back to the young. For this 10 year old to do this, she will go far, very far. She might even get her Extra Class License before I do, and I have a head start!

To Emily, I thank you for your card and dedication. I am sure you will get a passing grade on your next test. Then you will get your higher licenses and be a great amateur radio operator (ham) using the same skills that you displayed with this simple card you made and your operating time at Field Day

Until our next meeting - 73  
John Borichevsky – N1TOX  
President – West River Radio Club

Prez UPDATE: On October 28, 2006, Emily did pass her Technician License test. Congratulations to you Emily, we are all proud of you!! You are now the youngest member of the WRRC and we welcome you aboard!!

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## SPACE STATION NEAR MISS

(Ed note: The following was contributed by N1ESK, David. We're hoping that this interest in satellites will bode well for a satellite station at Field Day 2007)

An old U.S. Air Force spy satellite named Hitch Hiker 1 passed close but harmlessly by the International Space Station, a top ballistics expert with Russia's mission control center told the RIA Novosti news service June 27.

Hitch Hiker 1, launched aboard a Thor-Agena D rocket from Vandenberg Air Force Base, Calif., on June 27, 1963, closed within 1,000 feet of the space station at a combined speed of more than 32,000 miles (52,000 kilometers) an hour.

Hitch Hiker, whose mission remains classified, was thought to be designed to detect Soviet Union nuclear weapons tests from its polar orbit.

"Our calculations have been correct - the object flew past the station," Nikolai Ivanov told the news service, adding the ISS crew had not been instructed to try to photograph Hitch Hiker, because it was moving at such a high speed.

"The speed was more than 14 kilometers (9 miles) per second, and it was impossible to record it," Ivanov said. He noted that the U.S. Space Catalog contains more than 10,000 various objects of different sizes currently in orbit around Earth - including the space station.

"Only 10 percent of these objects, each of which has a number, are operable spacecraft, and the rest are just space garbage," Ivanov said.

He added, however, that if mission controllers' calculations had been incorrect, the satellite could have pierced or severely damaged the station. He said Russian and NASA systems had been monitoring the encounter.

"The ISS had a special procedure, developed in advance, for emergency maneuvers to swerve away from space garbage," Ivanov said. "The ISS has used six such maneuvers in its history - four with the help of Progress spacecraft and two using shuttles."

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## GRACIE DAY #3

On August 5 the following club members enjoyed our third year on the Common in Townshend helping to celebrate Grace Cottage Hospital Fair Day. The weather cooperated and there was a good turnout. We even made some contacts in between chatting with various and assorted visitors.

Thanks to all who assisted with the pre event chores on Friday evening getting Grant's booth set up and hanging the club's new end fed Zepp. Thanks also to those who provided gear, did some operating and/or engaged in some serious rag chewing.

Below is a list of those club members I noted down. If I missed anyone, my apologies and let me know about it.

AA1T, Grant - KB1KSR, Ed - KB1NJA, Walter KA1ZQX, Tim - K1KU, Darrel - N1TOX, John KB1LQB, Chas - KD6MPY, Sean - N1JSG, Richard - W2NH, Gordon - KB1HCG, Mark KB1J, Richard - KA1TWV, Elaine - WB1CZA, Wil

Ideas for improving things in 2007? If so, give a shout to anyone on the Board of Directors:

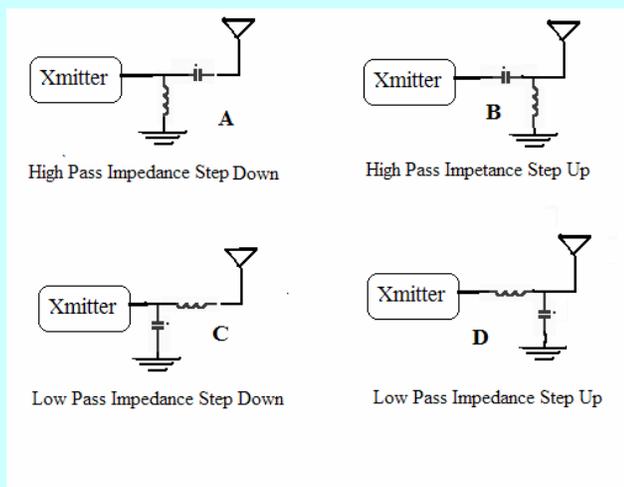
- o N1TOX, John, at [n1tox@adelphia.net](mailto:n1tox@adelphia.net)
- o KD6MPY, Sean, at [kd6mpy@arrl.net](mailto:kd6mpy@arrl.net)
- o K1KU, Darrel, at [k1ku@arrl.net](mailto:k1ku@arrl.net)
- o KA1ZQX, Tim at [ka1zqx@netzero.net](mailto:ka1zqx@netzero.net)

# Pi, Tee and L Networks

## Part 1 – L Networks

Having talked about the impact of properly matching a feed line to a transmitter output let's discuss for a bit these matching networks. Antenna matching networks may be classified (among other ways) as ladder networks or as resonance networks. An example of the latter would be the Z-match network while an example of the former would be the Tee match network. Probably the Tee matching system is the most common antenna matching network in use today.

The fundamental matching network is the L network. The L network exists in four configurations as depicted in the diagram below.



Can you see the pattern between the networks? In **A** above, is depicted the situation where the input impedance of the feed line is lower than the impedance required at the output of the transmitter. In **B** is shown the situation wherein the input impedance presented by the feedline is higher than the impedance required by the transmitter. **A** and **B** are both high pass matching networks since the series element is a capacitor. **C** and **D** have the series element as an inductor and so are low pass networks.

In the case of both **A** and **C** the end of the matching network that is higher in impedance than the other is attached to the shunt element whether or not it is a capacitor or inductor. In the case of both **B** and **D** the impedance presented by the feed line is higher than the

impedance required at the output of the transmitter, the shunt element is connected to the feed line whether or not it is a capacitor or inductor.

The rules for evaluating an L matching Network are:

1. The network is high pass if the series element is a capacitor and low pass if the series element is an inductor.
2. The shunt element is always on the end of the network that is of higher impedance than the other.
3. The term step up refers to the direction of information flow so that if the input impedance of the feed line is higher than desired by the transmitter we speak of stepping up the impedance.

The L network is reversible so that one just end for ends the the connecting cables to go from a step up to a step down configuration.

The L network has a significant disadvantage in that it cannot match 50 Ohms to 50 Ohms. As the load approaches 50 Ohms (in the typical situation) it gets more and more difficult to find settings of the controls that give a match.

It has two advantages in that there is only one combination of controls that give a match. The PI and the Tee network have more than one combination of controls that show a match, but some of these matching combinations will cause the Tee or PI match to absorb a lot of power. The L network has the lowest possible Q in any situation and thus the widest bandwidth for the match (which may not be very wide if the difference in impedance levels is large). The Q of an L network is calculated as

$$Q = (\sqrt{R_1/R_2}) - 1$$

Where  $R_1$  is the larger of the resistive components at the input or output.

(This series of technical articles is contributed by Grant Warner, AA1T)

## CONGRATULATIONS

Let's give a warm welcome to two new Hams that have joined the ranks of Amateur Radio operators worldwide as a result of the club's recent Tech class.

They are:

- o John Angil, KB1NWT
- o Nathan Andrews, KB1NWU

(Late breaking news. 10 year old Emily Andrews passed her Tech exam on August 28, 2006. Congratulations, Emily!)

As with other new Hams who have earned their tickets via a WRRRC VE session they have won a one year's free membership in Vermont's premier ham club.

We hope to see you soon at a club meeting or event.



## SEPTEMBER DOINGS (Es looking ahead)

- ♦ **September 12** – WRRRC meeting. An evening of kit building
- ♦ **September 13** – RACES drill
- ♦ **September 16** – CERT conference. Rutland, VT
- ♦ **September 30** – WRRRC Board of Director's meeting. 11 AM at the Panasian Restaurant by Staples in Brattleboro. All members are welcome.
- ♦ **October 6 & 7** – Hosstraders at the Hopkinton Fair Grounds. Check it all out at [www.hosstraders.com](http://www.hosstraders.com)
- ♦ **October 10** – WRRRC meeting.
- ♦ **October** – 3<sup>rd</sup> weekend. KB1MUF, Peter is setting things up for WRRRC participation in JOTA
- ♦ **October 31** – WRRRC Board of Director's meeting. 11 AM at the Brattleboro House of Pizza by Staples in Brattleboro.



## NEED HELP?

We can't solve any personal problems, but for Ham and club related matters we'll try our darndest.

General club related matters: contact our President, John Borichevsky, N1TOX – [n1tox@adelphia.net](mailto:n1tox@adelphia.net) or 802-257-5526

Membership, ARRL renewals or joining the League, and financial information: contact

Darrel Daley, K1KU, [k1ku@arrl.net](mailto:k1ku@arrl.net) or 802-387-5822

VE tests, club programs, or Ham classes: contact Sean Sanderson, KD6MPY, [kd6mpy@arrl.net](mailto:kd6mpy@arrl.net) or 413-695-5133

PR ideas? Contact Tim Bell, KA1ZQX at [ka1zqx@arrl.net](mailto:ka1zqx@arrl.net) or 802-365-7046

Also, surf to [www.westriverradio.net](http://www.westriverradio.net) where you'll find a wealth of information.

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